BRITISH MEDICAL JOURNAL

LONDON: SATURDAY, OCTOBER 3rd, 1936

PATHOLOGICAL CHANGES IN BONES AND JOINTS INDUCED BY INJURY*

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(With Special Plate)

Fractures

The most obvious lesion resulting from injury to bone is a fracture. The extent of the fracture will depend upon the degree of trauma, the angle at which it is applied, the weight or stresses which the fractured bone is supporting at the time, and the fragility of the bones. While in the majority of cases the fragments are separated so much that a radiograph taken in any of the usual planes will provide definite evidence of the fracture, in some cases little or no separation results, and radiographs in one or more planes fail to reveal any sign of the lesion. It is therefore essential that all patients *x*-rayed for evidence of fracture should have radiographs taken in two or more planes. Where possible, one plane should be at right angles to another. Further radiographs should be taken immediately after the injured limb has been immobilized, as the good position shown on the primary radiographs may have been lost during the process of immobilization.

Value of Serial Radiographs

The stage of healing and some idea of the time when the limb can be subjected to any of its normal stresses and strains can be shown by radiographs taken at intervals of one to two months. Serial radiographs show that gradually the fractured ends lose their sharp contours with some diminution of their density, while bridging the gap between the fragments faint shadows of callus appear which slowly increase in density. The fractured ends become rounded off, the callus sweeps over them, more and more calcium is deposited until the whole assumes the density and trabeculation of normal bone, and ultimately the site of the fracture has the appearance of a plumber's wiped joint, in which all detail of the broken ends is completely obliterated. Such is the sequence in the uncomplicated case which can be radiographically recorded in two to four months.

Sometimes, notably in fractures of the neck of the femur, the carpal scaphoid, the shaft of the humerus, and at the junction of the middle and lower thirds of the tibia and fibula no evidence of union may be detected. Much callus may be shown surrounding the fractured surfaces of the humerus, tibia, or fibula, but the gap is not bridged and no trabeculae can be seen passing from one extremity to the other. The callus on each extremity may be splayed out and present an irregular sclerosed border to its fellow. Such an appearance may persist for years and a false joint may even develop at the site which permits of movement and angulation of the fragments. Atrophy and absorption may occur in any fragment of bone, especially the head of the femur, which has been deprived of its physiological function as a result of non-union. As long as it is possible to detect the extremities of the fragments and impossible to see evidence of bone trabeculae bridging the gap one must conclude that consolidation of the fragments has not taken place.

Fate of Bone Grafts

Attempts to unite the fragments may be made by fixing a bone graft across the gap. Serial radiographs will show the ultimate fate of the graft. It may be:—(*a*) vascularized, and become an integral part of the bone; a successful graft gradually becomes decalcified to such a degree that it assumes the density of the fractured bone, and after fusion has taken place and the graft is endowed with physiological functions it gradually increases in density by the storage of calcium and assumes the structure and outline of the normal segment: (*b*) it may be gradually absorbed, and then the radiograph will indicate a gradual erosion and disappearance of the graft; the explanation for this phenomenon has not been definitely established: (*c*) the graft may retain its calcium, which will be inferred from the fact that serial radiographs show its density and sharpness of outline to remain unchanged; such a graft is ultimately discharged through a sinus or has to be removed surgically.

In those cases of compound fracture complicated by sepsis the radiograph will indicate extensive osteoporosis of the living bone unless its vascularity has been impaired, but any fragment of bone which has been deprived of its blood supply will retain its density and sharp outline. These characters enable us to detect the sequestrum from the living fragments which show the same diminution of density and rounding off of their surfaces as is exhibited by the main fragments. Such are the radiographic findings in the majority of fractures. There remain a minority which show extraordinary changes.

Kuemmell's Disease

In my paper* on "Deformities of the Lumbo-sacral Region of the Spine" I pointed out that in some cases radiographs of patients who had received injuries to the spine did not show any detectable damage if the radiographs were taken within a day or so of the injury, but if radiographs were taken two to four weeks after the injury had been sustained, evidence of damage to one or more vertebral bodies might then be present. If the injured spine has not been relieved of pressure or strain a degree of collapse of the affected vertebral body may occur. It is

* Read in opening a discussion in the Section of Radiology at the Annual Meeting of the British Medical Association, Oxford, 1936.

* *Brit. Journ. Surg.*, 1928–9, xvi, 562.

probable that Kuemmell's disease, which is described as a non-tuberculous rarefying osteitis, has its origin in this way. The explanation of the changes in the radiographic appearances may be that the injury caused damage to the cancellous tissue which could not be detected until absorption of the damaged trabeculae had permitted collapse and produced an alteration in the outlines of the vertebral body. Consolidation of the fragments may proceed normally, but in some cases there is considerable delay and increasing deformity.

Somewhat similar changes are to be seen in the carpal scaphoid. In this bone we have the advantage of closer apposition to the radiographic film, consequently the detail of the cancellous structure is more clearly defined and fine fissures may be detected on careful inspection. But even here damage may not be revealed until the damaged trabeculae have been absorbed and a cyst-like area has been formed at the site. At this stage a fissure through the wall of the " cyst " may be shown.

Another site in which abnormal changes follow trauma is the wall of the acetabulum. Though radiographs taken soon after the injury may show no definite change, a progressive protrusion of the acetabular roof into the pelvis develops as the result of pressure on the damaged bone, which now appears to have become somewhat plastic. This is one of the causes of the lesion referred to as " protrusio acetabuli."

Fractures of the femoral neck fail to unite in a relatively high percentage of cases. The bone in the region of the fracture undergoes gradual absorption leaving a gap between the fragment bearing the femoral head and the lateral extremity of the neck. More recently an added percentage of successes has been recorded following the fixation of the fragments by the Smith-Petersen pin and other devices.

Wiring and Plating

Serial radiographs of bones which, following fracture, have been held in alignment by metal plates, wires, etc., show that good apposition of the fragments and often union may be secured thereby, but that as long as the metal is retained the bone will not completely recover its normal strength and elasticity. The appearances suggest that a chronic inflammatory process is induced by the foreign body which leads to plasticity and bending of the bone in spite of the metal attachments, which may either be torn out or bent with the bones. Such radiographic findings, which have been seen to arise in bones several years after the surgical introduction of the metal, suggest that as soon as radiographic evidence of union between the fragments can be obtained, the metal attachments ought to be removed, if ultimate effective consolidation and healing is to take place.

The junction of the middle and lower thirds of the tibia and fibula when fractured in some infants appears to be very liable to non-union even after repeated bone grafts, and a pseudo-arthrosis develops at the site of which the lower fragments are angulated backwards at about 90 deg. Compensatory changes occur in the bones of the foot as a result of the abnormal positions which they are thus forced to attain. Radiographs suggest that the lesion is due to a congenital defect in ossification at the site of fracture, for in some cases cyst-like areas with defects in the cancellous structure may be detected in this neighbourhood before actual fracture has occurred.

Osteochondritis

Until the beginning of the present century all localized rarefying conditions of bone were regarded as due to tuberculous infections. Many of them were undoubtedly of this nature, but it was noted that in a considerable percentage of such cases the clinical course of the condition was not such as would be expected if it actually was due to tuberculous infections. With the routine use of *x*-ray investigation it is now possible to follow these cases and to study the living pathology. Gradually, doubt has given way to certainty that many of the localized rarefying changes in bone, affecting the primary and secondary centres of ossification, are definitely non-tuberculous in origin. Such localized rarefying bone changes have now been described in many centres, for example:

Kuemmell (1895) has written on the spine; Osgood (1903) and Schlatter (1908) on the tubercle of the tibia; Köhler (1908) on the tarsal scaphoid and patella; Legg, Calvé, Perthes and Waldenstrom (1910) on the epiphysis of the head of the femur; Kienbock (1910) on the semilunar; Preiser (1910) on the carpal scaphoid; Sever (1912) on the os calcis; Freiberg (1914) on the head of the second metatarsal; Scheuermann (1921) on the spine; Renander (1924) on the medial sesamoid of the big toe; Van Neck (1924) on the pubis; Buchman (1925) on the iliac crests; Voltancoli (1925) on the ischio-pubic junction; Calvé (1925) on the spine; Friedrich (1924) on the clavicle; Lewin (1927) on the shoulder; Mauclaire (1927) on the heads of the metacarpal bones; Mouchet (1928) on the astragalus; Wagner (1930) on the epiphysis of the first metatarsal; and Burns (1931) on the lower ulnar epiphysis. I have recorded these changes in the pedicles of the fifth lumbar vertebra, the adult scaphoid, the femoral neck, the accessory scaphoid, and the roof of the acetabulum.

The number of sites in which bony changes of this type are recorded is added to every year, and it seems to be generally accepted that the underlying changes are of the same nature, that is, an osteochondritis. Though we have extended our knowledge as to the sites in which these changes may be found, agreement has not been reached as to the pathology of these bone lesions. After carefully weighing the evidence obtained from over 100 cases personally observed, I am of the opinion that trauma is the exciting cause of these conditions, but in view of the fact that it is the minority only of the cases of trauma in which the sequence of characteristic changes develop, I feel that there must be some other contributory factor. Stunted development following changes resembling those of osteochondritis are often seen to follow manipulative reduction of congenital dislocation of the hip-joint. Such changes have never been seen in the dislocated femoral head where reduction has not been attempted. It is impossible in this paper to define the serial radiographic changes found in osteochondritis; I must refer you to a previous paper.

Ossification of Haematomata

Injury to the surface of a bone may be associated with the formation of a haematoma which will not be revealed by a radiograph in the early stages. Some haematomata are prone to calcification in which subsequent ossification may occur. In the early stages of calcium deposition radiographs will show a cloudy shadow which may somewhat blur the outline of the involved bone, which at this stage often shows a localized osteoporosis. As these radiographic appearances are associated with a tumour devoid of the clinical signs of inflammation in a patient who may not remember the injury which caused it, it is not surprising that the suspicion of sarcoma has been aroused and amputation performed before the error was discovered. Such radiographic appearances should indicate that a further *x*-ray examination ought to be made after an interval of one or two months. It will then be seen that the abnormal shadow has lost its cloudy appearance and is taking on a fairly well-defined outline. Ultimately the appearance of new bone will be shown. This new bone

may appear as (1) an irregular boss on the periphery of the shaft; the lateral surface of the middle third of the femur and the upper third of the humerus being the most common sites: (2) a fusiform deposit around the shaft of a bone such as is seen in the march fracture of the second metatarsal: (3) irregular spurs in the neighbourhood of a joint, particularly the elbow and other big joints—hip, shoulder, knee or ankle—which have been dislocated: or (4) bands of new bone stretching over and fixing neighbouring joints; the hip-joint area is the most common site for these changes.

In certain cases calcium is densely laid down in the haematoma and the latter then appears on the radiograph as a dense granular structure having well-defined rounded borders. If the trauma injures the periosteum and such blood as is extravasated is absorbed, subsequent radiographs may indicate the site of the trauma by a localized thickening or sclerosis of the cortex.

Cyst-like Changes after Trauma

Injury to cancellous bone which can be studied in radiographs of the hand and wrist may not be sufficient to cause a breach of continuity of the surface of the bone, but may yet lead to a localized absorption of the damaged trabeculae and produce a cyst-like appearance. I have found such appearances in the heads of the metacarpals and in all the carpal bones of men who had worked for ten years or so with compressed air drills (see Plate, Fig. 1). But the commonest site for this development to be seen is in the carpal scaphoid to which reference has been made in a previous paragraph. The larger areas of cancellous destruction with cyst-like development in the head and neck of the humerus, which are sometimes referred to as localized osteitis fibrosa cystica, are considered by some authorities to be due to trauma, for on histological examination the contents often resemble the structure of old blood clots. The simple cysts, which are most commonly found in the shaft of the humerus and in the neighbourhood of the trochanteric region of the femur, are also thought to be due to trauma. Such lesions are usually brought to light by so-called spontaneous fracture—that is, fracture due to trauma of relatively trifling degree.

Changes in the Joint Space

Many injuries to the articular cartilage must occur which do not produce any appreciable alteration in the radiographic appearance of the bones entering into the joint. In some cases in which the injury has been followed by effusion into the joint it may be possible by comparative examination of radiographs of the joints on both sides to recognize an increase in the joint space on the affected side. For the purposes of description the gap between the surfaces of the sub-articular bone is usually referred to as the joint space, but it is recognized that in the normal joint this gap represents the thickness of the opposing articular cartilages which are in contact with one another. With effusion into the joint the surfaces of the articular cartilages are separated and the gap between the bones is accordingly increased. On the other hand, in those joints in which atrophy or destruction of the articular cartilage has occurred the gap between the sub-articular bony surfaces is reduced or obliterated. Such reduction in the joint space is rarely seen to follow injury until several weeks or months have elapsed if the joint is not infected, even though movements of the joint may be painful for a month or more after the injury.

Thus it is unusual to be able to detect radiographic changes in the joints of active footballers though these may have been subjected to repeated trauma of a severe degree. The physically fit man seems to be able to endure such injuries without his bones and joints registering any appreciable radiographic change. Nevertheless it would appear from radiographic examinations that certain joints which have been so injured yet given insufficient rest to completely recover not infrequently develop degenerative changes during middle life. These take the form of diminution of the joint spaces indicating atrophy of the articular cartilage, particularly where this is subjected to the greatest strain.

In more severe degrees, such appearances as pointing of the articular margins, and osteophytic development around them, the formation of loose bodies within the joint, eburnation, and erosion of the bony surfaces which have been brought into contact may be detected—in fact, all the degenerative changes which we associate with the term osteoarthritis. Such a sequence of changes does not always take place, and this suggests that some other factor must be present.

Aetiology of Degenerative Changes

In a previous paper I suggested that these degenerative changes were probably due to the products of faulty metabolism or to the effect of bacterial toxins acting over a long period on joint surfaces which had been injured, for osteoarthritis is only manifested in those joints which have been subjected to abnormal stress or strain in a person who also exhibits elsewhere the signs and symptoms referred to as rheumatism, fibrositis, etc. Such findings suggest that the persistence of pain in an injured joint which does not yet show any radiographic departure from the normal indicates faulty metabolism or absorption of toxins: the discovery, correction, or eradication of the latter has resulted in the disappearance of the symptoms and the prevention of those pathological changes in the joint to which reference has been made.

Once these degenerative changes have been indicated in a joint, serial radiographic examinations will show a slow progression of the lesion with gradual limitation of the range of movement due to destruction of the articular surfaces: but bony ankylosis never occurs unless induced by surgical resection of the articular surface and close approximation of the bared bony surfaces. Rest appears to be the only factor which checks the progress of the lesion or leads to its repair. If the injured joint is devoid of normal trophic influences, as in syringomyelia, tabes dorsalis, spina bifida, etc., normal regeneration appears to be checked or abolished and the joint surfaces with the underlying bones are slowly and painlessly worn away, the liberated calcium often appearing as an amorphous deposit in the neighbourhood. These changes are frequently associated with effusion into the joint and signs of oedema in the neighbouring tissues. Such changes are not confined to the anatomical joints. They have been seen to develop at the site of fractures of the shafts of the long bones. It is the development of changes of this nature in such pseudo-arthroses and in joints other than the hip, shoulder, knee or elbow which may give rise to difficulties in diagnosis. Such changes have been mistaken for those of secondary neoplasm.

Subluxation and Dislocation

Subluxation or dislocation of any joint may be produced by trauma. In some cases the ligamentous and muscular control may permit of easy displacement of the joint surfaces and in these cases recurrent dislocations are common. Easy displacement usually permits of easy reduction and therefore secondary changes due to trauma do not readily appear. Normally developed joints usually require severe trauma before they can be dislocated, and in some cases it would seem that reduction is accomplished by the exercise of force which subjects the part to trauma of

even greater severity. In some of these cases radiographs show that the rim of the joint has been fractured in the procedure. In others the radiograph of the reduced joint gives no indication that the part has been subjected to trauma, all the joint surfaces and surrounding tissues appearing quite normal. But it is unwise to base an opinion of the severity of an injury on the radiographic appearance of the part soon after reduction. Serial radiographs taken at three-monthly intervals will demonstrate the truth of this. Depending on the severity of the injury, changes will gradually be shown on the radiographs.

The first sign may be a relative osteoporosis of the ends of the bones entering into the formation of the joint. The damaged articular surfaces may become blurred in outline, and hazy ill-defined amorphous deposits of calcium may be seen in the neighbourhood. Later radiographs will show organization of this calcium in the form of irregular strands or spurs of new bone, some of which may appear to have firm attachment to the bony surface, others lying in the intermuscular planes. The joint may ultimately be bridged by a band of new bone which effectually prevents all movement. In other cases the lesion shows the gradual development of the typical appearance of an osteoarthritic joint. It may take several years before we can estimate the extent of the damage which the joint has sustained (see Figs. 3–5).

The Intervertebral Disks

Injury to an intervertebral disk may not be apparent for several months after the trauma. It may then be indicated by diminution of an intervertebral space and lipping of the adjacent margins of the vertebral bodies, and perhaps partial localized ossification of the anterior common ligament. If, in addition, the articular facets have been involved, some degree of curvature may arise, and, after a few years, the articular processes may show irregular sclerosis, most marked at the site of the injury, but also indicated in the bodies on the concave aspect of the compensating curvatures, above or below the site of the injury. Damage to the cartilaginous plates may result in herniation of the nucleus pulposus into the affected vertebral body.

The disk may be injured by the needle used in lumbar puncture, performed for diagnosis, treatment, or anaesthesia. Following such a procedure the patient complains of a persistent backache, and serial radiographs will show a progressive reduction in the disk space with some osteoporosis of the adjacent vertebral bodies. Ultimately localized ossification of the anterior common ligament occurs with sclerosis of the adjacent surfaces of the vertebral bodies. R. W. Billington, reporting on spondylitis following cerebro-spinal meningitis, stated that twelve of fourteen cases he studied showed pathological changes in the lumbar region. Because of this he conjectured that the vertebrae were affected by trauma caused by the needle and by direct inoculation with the meningococcus from the passage of the needle through the infected spinal fluid.

B. J. Alpers has recorded the clinical and radiological findings occasioned by chondromata of the intervertebral disks, cartilaginous extensions of the intervertebral cartilages into the spinal canal. He states that they are commonly to one or other side of the mid-line, usually the left, firmly anchored to the disk, and causing pressure on the anterior aspect of the cord. They have been found in the lumbar and cervical regions; they appear to be related to trauma. The symptoms are slowly progressive and recovery follows removal. No indication of their presence may be given on the straight *x*-ray, but following lipiodol injection an obstruction will be indicated by the hold-up of the opaque injection.

Post-traumatic Osteoporosis

The bones of a limb which is immobilized following trauma or a localized surgical operation show a gradual and somewhat irregular decalcification even of those bones which were not involved by the injury. Serial radiographs of the bones often show very marked changes not only in the calcium content but in the cancellous and compact structure of the bone. The cancellous extremities of the long bones, particularly in the neighbourhood of the epiphyseal line, though the epiphysis may have been fused with the diaphysis for years, show a marked decalcification and consequent radio-transparency. With the same exposure as for a normal limb the radiograph will appear to be considerably over-exposed. With the time reduced sufficiently to give a correct exposure for the decalcified bone the radiograph will show a compact cortex to the shaft which gives the false impression of increased density and calcium content. An examination of the structure of the bone in a serial collection of radiographs of an immobilized limb will reveal not only irregularity in density of the compact tissue in which there may be cortical islands which are very radio-transparent, but very marked changes in the cancellous structure. Coarse and thickened trabeculae enclosing larger meshes appear to replace the fine and exquisite reticulation of the normal cancellous tissue. These appearances may persist for a year or more after immobilization of the limb has terminated, but eventually the delicate architecture of the normal is restored (see Special Plate, Fig. 6). There is a class of case, however, in which these retrograde changes show a progressive development in association with certain well-marked clinical signs and symptoms.

Following trauma, particularly in the neighbourhood of the multi-articular joints of the wrist and foot, but also in the neighbourhood of the larger joints such as the knee and shoulder, a sequence of symptoms develop in some patients which may give rise to the diagnosis of tumour or tuberculosis. The trauma may in itself not occasion any great pain or disability: even that which is present soon after the injury may gradually disappear. Following a period of quiescence in the affected part or in the extremity distal to the injury a painful and disabling condition may develop which is not relieved by rest and often resists all electro-medical applications. The affected part appears turgid, its skin thin, shiny, and red or bluish, and often moist. Movement of the part is painful. Serial radiographs taken during the development of the condition reveal a progressive decalcification of the cancellous tissue, at first as small circumscribed foci in the cancellous extremities of long bones, or in the short tarsal or carpal bones. The compact tissue of the shaft may appear to contrast with the decalcified extremities, but ultimately this, too, may show a progressive decalcification, at first rather irregular in its distribution, giving the bone a mottled appearance.

This condition, which was first described by Sudeck, is often referred to as "acute bone atrophy," a name which unfortunately does not readily occur to observers of this type of lesion, for it may persist for a number of years. As the condition develops in but a small proportion of patients who have suffered traumata, some other factor such as focal sepsis or intoxication may be the sensitizing agent. The radiographic appearances during the progress of the lesion suggest that the bone changes are due to some disturbance in the trophic regulation of the part, and the reaction towards improvement, at any rate for a short time, which seems to follow sympathectomy, appears to support this.

Where such changes follow traumata which have necessitated immobilization, the radiographic appearances will be regarded as being due chiefly to disuse of the part and consequently will not occasion any serious reconsideration of the diagnosis, but in those cases in which the initial traumata have been given little or no prominence in the clinical history the progressive clinical signs and abnormal radiographic appearances may give rise to very serious errors in diagnosis unless the observers are familiar with the condition. In some cases these clinical and radiographic signs have led to such grave diagnoses as bone tuberculosis, sarcomata, or other malignant changes, and even amputation has been advised, yet in other cases the slow progression of the lesion, the vasomotor disturbance, and the appearance of disuse atrophy which accompany them have been regarded as evidence of malignancy. Judging from the radiographs which have been referred to me for an opinion, it is particularly in the region of the larger joints, the knee, shoulder, and elbow, that these changes in the bone have been most confusing. A number of these cases have been observed over several years during which little or no improvement has been recorded on the radiograph and the affected limb has become more and more disabled, particularly in those patients who have lost faith in the benefits of physical medication. Turner claims to have obtained good results by iodine injections, while Middleton and Bruce found favour with acetylcholine. To instance the consequences of misinterpretation of such lesions the following brief account of a case submitted to me for an opinion is given:

CASE REPORT

The patient developed a painful elbow and was sent for a radiographic examination. The radiographs revealed the changes seen in traumatic arthritis, but these were attributed to tuberculosis and other more serious conditions for which he received, over a period of three years at the hands of various men in this country and many places on the Continent, courses of ultra-violet irradiation, Hertzian irradiation, deep *x*-ray therapy, injections of tuberculin, iodine, and mercury, and an exploratory operation. In spite of all these interfering irritations the lesion presented surprisingly little change in the radiographic appearances and with a complete rest from all treatment I suggested that it might resolve.

Trauma and Focal Inflammatory Changes

It has been established experimentally that localized trauma to an animal with pathogenic organisms circulating in its blood can initiate the development of a bone abscess at the site of the trauma. Corroboration of this experimental evidence is abundantly obtained from examination of the histories of patients exhibiting localized acute or chronic inflammatory lesions. Many cases of acute septic abscess, tuberculosis, or gummata of bone present clinical evidence of a primary septic, tuberculous, or syphilitic focus apart from the bone lesion which often appears to have originated at the site of a definite injury. Because localized injury dominates the clinical picture in the early stages of the lesion, the superadded pathological changes may escape discovery for weeks or months. Indeed, in some cases, though the nature of the lesion may now be obvious, it is not recognized except by a fresh observer who is not obsessed with the traumatic evidence. Serial radiographic examinations of injuries to bone will give the earliest indication whether healing is proceeding with normal regularity, or whether it is complicated by some underlying pathological process. In some cases the nature of the process will be suggested by the radiographic appearances.

Trauma and Malignant Disease

It has long been thought that malignant disease could be initiated by injury, but until we know the other essential factors concerned in the metaplasia which occurs it will be impossible to prove the theory definitely. We know that there must be other essential factors besides trauma because it is only a very small proportion of injuries which are followed by malignant metaplasia. The statistics of the German Army and Navy show that 1 in 15,000 injuries is followed by malignant changes. Many cases of malignant disease seen in practice appear to have a definite association with previous injuries, therefore it is not surprising that many medical men hold that there is a distinct relationship. The belief appears to have an even wider following amongst the general public, in whom the question of injury is immediately raised when a diagnosis of malignant disease of bone is made. Cases that I have seen have usually shown at the first radiographic examination evidence of definite changes in the bone of the injured limb.

When taking the history, the patient may state that the part was severely injured a few weeks, months, or years previously and there may be a scar to indicate the site of the injury. In two instances which I observed, the patient had had a gun-shot wound with fracture at the site of the malignant tumour of bone; in another case, an osteotomy had been performed. Such histories seem to lend strong evidence to the theory. Three cases of endothelial myeloma of bone in young people who subsequently died of metastases in other bones and viscera gave definite histories of previous injuries.

CASE REPORT

A youth, aged 15 years 9 months, told me that at Easter, 1934, a heavy weight which he was supporting fell on his upper arm. He was taken to hospital but was not *x*-rayed for three weeks. The film evidently did not arouse the suspicion of malignancy, for after the taking of the radiograph (April 24th, 1934) he was given electrical treatment and massage for several weeks, until a further radiograph (June 14th) revealed additional changes in the shaft of the humerus which were now regarded as evidence of malignancy and for which amputation was advised but refused. It was at this stage that I was asked to report on a further radiograph, and the diagnosis of endothelial myeloma was made. We administered *x*-radiation, to which the tumour readily responded; so well in fact that the patient did not come to hospital for further treatment for several months, when the arm had again increased in size. Further radiation was given with equal response, after which nothing further was heard of the patient until he was admitted into another hospital, in which he died in February, 1936.

In this case the history of trauma was very definite, but unfortunately no radiograph was taken until three weeks after the injury, and this radiograph, which I have since been able to see, showed a fracture of the humeral shaft with very definite evidence of malignant changes in the bone.

But it is not only in primary malignant disease of bone that trauma appears to play a part. The histories of such cases as the following suggest that trauma may determine the site of metastases.

CASE REPORT

A patient sustained a severe injury to the buttock when knocked down by a car. When called to *x*-ray him the next day with a portable unit, I found that he had a very large bruise over the buttock, but the radiograph did not reveal any changes in the bones or injury to the pelvis. The patient apparently recovered from the injury, but six months after this he consulted me on account of a pulsating tumour in the buttock at the site of the contusion sustained at the

accident. He said that he had first noticed the pulsation during the previous week when he had been sitting for a long period on a hard seat, but he regarded it as an aneurysm of the gluteal artery and sought radiographic confirmation. The radiographs showed an area of cancellous destruction with an ill-defined margin. At the post-mortem a few months after, a secondary hypernephroma was found at the site of the tumour.

Further instances of this nature tend to encourage a belief in the association of trauma and malignancy.

Review of the Literature

In the literature there is much to support the belief. Segond in 1907 read a paper before the French Congress of Surgeons in which he put forward certain conditions which he considered should be fulfilled in any case of malignant disease deemed to be due to trauma. They include:

(1) Definite evidence of severe trauma within a reasonable time to a part which previously had appeared to be quite sound.

(2) The growth of the tumour at the site of the previous injury.

(3) The establishment of the diagnosis of malignancy by clinical, radiological, and histological examination.

W. B. Coley presented a paper before the New York Medical Society in 1897 in which he indicated that forty-six out of 170 cases of sarcoma gave a definite history of trauma. This worker and his associate, N. L. Higginbotham, presented a paper before the American Surgical Association, May 10th, 1933, in which they put forward a very strong case in support of the traumatic theory of malignancy. They claim that no fewer than 280 cases of sarcoma which they had personally investigated were associated with antecedent local trauma. An account of forty-six cases of sarcoma following war fractures and details of individual cases of malignant disease with antecedent severe injuries was also given. They further stated that

"the interval of time elapsing between the injury and the appearance of the tumour is often much shorter than is recognized by most writers. In the majority of cases the tumour develops within the first month or six weeks of the injury, but in a considerable number of cases it may develop within one or two weeks. The latter cases justify the classification of acute traumatic malignancy originally suggested by the English surgeons."

Coley considers that trauma creates a "favourable soil" for the development of a ubiquitous cancer organism. He states that "the micro-organism finds a suitable soil in the damaged cell, forming a symbiosis with the cell and causing a proliferation and multiplication resulting in a malignant tumour." But if such organisms exist everywhere it is very surprising that so few injuries are followed by malignant changes. These two factors alone cannot decide such developments.

Ewing is of the opinion that "mechanical trauma is an important factor in the causation of tumours." Its effects are: (1) solution of continuity, minute and gross; (2) separation of cell groups and tissue masses, as of skin, glands, bone; (3) necrosis of tissue; (4) confined haemorrhage requiring absorption or encapsulation; (5) accelerated regenerative processes with hyperaemia and new growth of specific cells, blood vessels, and supporting tissues; (6) cicatrization.

The percentages of malignancies with histories of antecedent injuries which are recorded by different observers vary considerably. The enthusiast for the theory is satisfied with evidence of trauma which would be rejected or ignored by others. Until we can produce at will the other essential conditions we shall not be able to determine the exact significance of trauma in malignancy.

Occupational Injuries

Those joints which, as the result of particular occupations, are subjected to abnormal stresses and strains show chronic arthritic changes. The latter gradually reduce the range of movement of the affected joint, and the workman is forced to acquire the ability of manipulating his tools with restricted joint movements. Ultimately the chronic arthritic changes produced by constant trauma may lead to incapacity, but this eventuality may be produced earlier in a joint already exhibiting evidence of traumatic arthritis by trauma of a degree unlikely to affect seriously a normal joint (see Figs. 2 and 7). Damage to bone and joints caused by occupational strain has not received its due acknowledgement under the Workmen's Compensation Act, and with the present law it sometimes becomes very difficult to assess the amount of responsibility when a workman, whose joints show evidence of severe occupational strain, claims that he has been incapacitated by a specific injury. By a law introduced in Germany in 1929 pathological changes in joints of workers using drills, hammers, etc., driven by compressed air, have been classified as an occupational disease. Following on the trauma any of the conditions which have been described in the preceding paragraphs may develop.

I would like to take this opportunity of stressing again the importance of an *x*-ray examination, as soon as possible after the accident, of any part which has been injured. Particularly does this apply to persons who are covered by the Workmen's Compensation Act. Such a radiographic record may prove invaluable, for not only will it register the condition of the bones and joints immediately after the accident and be a guide to treatment, but at a later date it may be used to compare with radiographs taken subsequently. A comparative examination of this nature will enable the radiologist to determine the condition of the bones and joints at the time of the injury and the extent of the damage produced in them by the accident.

In some cases this evidence is of vital importance in assessing the responsibility. Too often the first radiographic record is one made several weeks after the injury, generally because the workman on being put back to his duties insists that he is now unable to do them owing to the injuries received. A radiographic examination at this time may show serious disease of the bones or joints and it may be impossible to estimate the condition of the area at the time of the accident. If we compare the radiographs of a healthy joint which has been dislocated and reduced by manipulation we see that those taken immediately after the injury show the bones and joint surfaces to be indistinguishable from normal, yet radiographs taken one, two, or more years after may show very extensive or progressive changes which are associated with limitation of joint movements. On the other hand, the first radiographs may show that pathological changes are already well established and in some cases they indicate that compensation is being sought after by the workman who alleges that a relatively trifling trauma has produced the lesion which must previously have given him definite signs and symptoms. The following cases illustrate the value of a comparative radiographic examination:

CASE I

A patient was sent to me for an *x*-ray examination of the spine, which the patient alleged had been injured three years previously. The documents accompanying the request for the examination contained the previous medical and lay reports, from which I learned that after the accident the patient had been taken to hospital, *x*-rayed, and on the radiographic evidence had been fixed into a plaster case for nine months; subsequently he had been supplied with block leather supports, but had not done any work.

The radiographs revealed evidence of an old lesion of the first and second lumbar vertebrae which had resulted in fusion of the two deformed bones. The appearances indicated a very severe trauma which must have necessitated a long period of immobilization, but the impression conveyed to me was that the lesion had been produced more than three years previously. On questioning the patient as to the nature of the injury I learnt that while loading a railway truck a large piece of coke had fallen on his back. Such a trauma I felt could not have produced the severe lesion indicated by the radiograph, for I found on weighing the largest pieces of coke that these did not weigh more than about one pound each. These facts were embodied in the report to the company concerned, with the suggestion that inquiries should be made into the past medical history of the patient and that the radiographs taken immediately after the injury should be submitted for examination. In spite of careful inquiries no evidence of a previous illness could be obtained. The man had worked well until the date of the alleged accident. Examination of the first radiographs in comparison with those I had taken enabled me to say that no definite change had occurred in the spine during the interval, and therefore the lesion was an old one and not caused by the accident. Therefore on the radiographic evidence it was decided to put the case before the courts. At the court the confidence of the company's counsel apparently caused the man's solicitor to more closely cross-question his client, as a result of which a small settlement was agreed upon before the court opened. After the decision had been made, in answer to a request from the workman's solicitor he was supplied with the nature of the radiographic evidence and he then informed us that as the result of the examination which he made of his client just before the court opened, he had learned that the man had had a severe injury to the spine some seven years previously for which he had received a large sum as compensation.

CASE II

In another case the patient was referred for a radiograph of the foot to ascertain if there was any evidence of fracture of the base of the metatarsals. The patient, who was claiming compensation, gave a history of a fall from a ladder a few months previously which had incapacitated him. The radiographs revealed the relatively rare condition of osteochondritis of the adult scaphoid, and the appearances were such that in the report I stated that the lesion was older than that suggested by the date of the alleged accident. Some months after, when the case came for revision, I discovered in my collection radiographs bearing a different name, taken at one of the hospitals two years previously, which duplicated all the appearances registered on the man's radiographs, even to the detail of the cancellous architecture. The patient at a subsequent examination denied any previous injury to the foot or radiographic examination, but he failed to pursue his quest for compensation.

In this connexion it should be remembered that certain developmental abnormalities may be detected on the radiographs taken immediately after an injury which may be misinterpreted as evidence of bone injury. Such conditions as: (*a*) epiphyses developing from multiple or irregular osseous nuclei—for example, the epiphysis at the base of the fifth metatarsal; (*b*) ununited epiphyses or ossicles—for example, the epiphyses of the vertebral bodies and processes, the os acetabuli, the accessory tarsal scaphoid, etc.; (*c*) developmental defects—for example, persistent notochordal remnants in the vertebral bodies, the central venous channels in the vertebral bodies, defects in the vertebrae at the junctions of the different regions, particularly the lumbo-sacral. Instances could be given in which the radiographic discovery of such lesions led to misinterpretation and claims for compensation.

Summary

1. It is essential for the study of the effects of trauma on bones and joints that a careful radiographic record be made of the part injured within twenty-four hours.

2. Such a record will register whether or not the bones or joints presented normal appearances at that time.

3. The effects of trauma can be determined only by serial radiographic examinations over a long period—in some cases several years.

4. Trauma appears to play a definite part in determining the focus of settlement of pathogenic organisms and malignant cells, but the evidence is not conclusive, and will not be until we have better radiographic records made immediately after the trauma has been applied.

5. Disabling arthritis may be produced by trauma in modern industry (that is, occupational strain) which is not catered for by the Workmen's Compensation Acts.

6. The importance of an immediate radiographic record after an injury to any bone or joint of a workman covered by the Workmen's Compensation Acts cannot be overestimated.

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SUPRACONDYLAR FRACTURE OF THE ELBOW *

BY

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Through the courtesy and help of several surgical colleagues I have had the opportunity of reviewing a series of cases of injury of the elbow attending the casualty department of a general hospital. We find:

1. That 50 per cent. of injuries to the elbow are supracondylar fractures.

2. That supracondylar fracture is rare after the age of 14. It occurs most commonly in children between the ages of 8 and 12.

Anatomy

Before considering the questions of cause, treatment, and possible complications and sequelae of this injury, it would be well to draw attention to certain points in the anatomy of the elbow-joint.

1. The lower end of the humerus is flattened, and curves forward in its relation to the shaft. Its lower articular surface is oblique, the outer condyle coming forward with the epiphysis, the inner condyle, lower than the outer, being directed slightly backwards.

2. The outer portion of the articular surface is domed to allow rotatory movement of the radial head, the inner portion is grooved and accurately adapted to the coronoid and olecranon processes of the ulna. The ulna is the direct continuation of the humerus, and owing to the obliquity of the articular surface of the latter, the forearm deviates outwards on extension. This establishes the normal carrying angle of the arm.

3. Three depressions are present on the lower end of the humerus: a deep fossa behind to accommodate the olecranon process of the ulna in extension, and two in front, one occupied by the coronoid process of the ulna, and a smaller one by the head of the radius in the position of flexion.

4. A knowledge of the ossification of the lower end of the humerus is important for the correct interpretation of radiographs. In relation to supracondylar fractures the important points to remember are that no centre of ossification is present in the lower end of the humerus until the second year, when that for the capitellum appears. No other centre

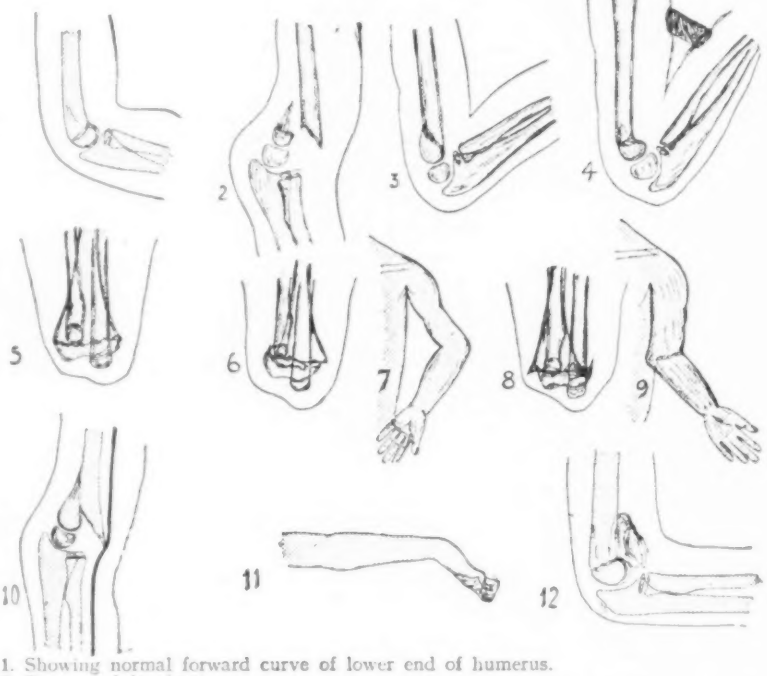
* Read in the Section of Orthopaedics at the Annual Meeting of the British Medical Association, Oxford, 1936.

is shown radiographically until the fifth year, when that for the internal epicondyle appears, followed in the ninth year by the nucleus for the external epicondyle, and about the tenth year by that for the trochlea. These fuse with one another, and the shaft, by about the seventeenth year. The line of fusion—that is, the epiphyseal line—is just above the epicondyles. As the line of fracture is usually the epiphyseal line in front this probably accounts for the rarity of this fracture after adolescence.

Diagnosis

It is often difficult to ascertain the exact nature of the injury in children. It would seem that this fracture most commonly results from force directed through the hand on an extended elbow, although it may also be the result of direct injury to the flexed elbow. According to the direction of force the displacement of the lower fragment may be posterior or anterior; anterior displacement is relatively uncommon. The line of fracture is usually about the epiphyseal line in front, extending obliquely backwards and upwards, so that a portion of the shaft is conveyed backwards with the lower fragment. Lateral or mesial displacement and rotation of the lower fragment in relation to the shaft also occur.

In the normal elbow-joint the arm is rigid in extension, and extension itself is limited. In the position of extension a line joining the external and internal condyles passes across the tip of the olecranon process in a slightly backward direction. In supracondylar fractures with displacement serious injury in the neighbourhood of the elbow will be obvious. Neither bony points nor the margins of the fractured surfaces may be palpable because of swelling, but if full extension is possible, and lateral mobility in both directions is present in this position, a separation of the lower portion of the humerus is to be expected. If these clinical signs are present there must be a separation of both condyles in relation to the shaft. An *x*-ray will reveal the line of fracture and displacement of the fragment.



1. Showing normal forward curve of lower end of humerus.
2. Supracondylar fracture.
3. Incomplete reduction. Failure to restore normal forward curvature of the lower end of humerus.
4. Showing use of wedge to provide forward traction on epiphysis on flexion of the elbow.
5. Antero-posterior view showing true reduction.
6. Antero-posterior view showing radial displacement of epiphysis. This leads to:
9. Valgus deformity or increase of carrying angle.
8. Ulnar displacement of epiphysis leads to:
7. Loss of carrying angle—the common gunstock deformity.
10. Illustrates injury to median nerve by sharp margin of upper fragment.
11. Volkmann's ischaemic contracture.
12. Myositis ossificans.

Treatment

With regard to the usual posterior displacement, although many methods of reduction and forms of fixation have been advised, my experience has satisfied me that the reduction can usually be obtained easily, and a good functional result assured, by treatment of this fracture on very simple and well-established lines. It was my good fortune to be trained in the Liverpool school, and I believe that the methods of reduction and treatment of this fracture as advocated by Robert Jones in 1902 can usefully bear repetition. The treatment I adopt is, briefly, as follows:

Extend the elbow, supinate the forearm, and assure the restoration of the carrying angle. Traction is then applied to the forearm while the elbow is gradually flexed, and backward pressure is maintained on the lower portion of the humeral shaft.

The degree of flexion should be as acute as the local swelling will allow, without disturbance of peripheral circulation. The triceps will then act as a posterior splint.

This position is maintained by attaching the wrist to the neck, by means of a collar and cuff.

If reduction is complete, subsequent *x*-rays will show that the normal forward curve of the lower end of the humerus has been restored.

In some cases because of the swelling, or the obliquity of the line of fracture, the anterior curvature of the lower end of the humerus cannot be maintained by these means alone. In these cases flexion over a pad between the mid-forearm and humerus will produce the necessary forward traction of the lower segment.

Although a perfect functional result is common in children even though the reduction is not anatomically perfect one must always be anxious as to the possibility of deformity, unless the *x*-rays show a perfect anatomical reduction in both the lateral and the antero-posterior views. Because of the position of flexion, the antero-posterior view will be partially obscured by the radius and ulna but it will show whether there is any lateral or mesial displacement of the lower fragment in relation to the upper. This is most important, as unless this anatomical relation is accurately established one will be uncertain as to whether the deformities of cubitus varus or cubitus valgus may not present themselves when full extension is restored. The more common is the loss of the carrying angle, or gunstock deformity, which would appear usually to be due to failure to reduce the mesial displacement of the lower fragment in relation to the upper. The increase of carrying angle occurs when the lateral displacement of the lower fragment has not been completely reduced.

The second point to be emphasized after reduction of this fracture in children is that no other treatment than that of rest is desirable until union of the fragments is firm. Early massage can do no harm, but anything in the way of passive movements should not be allowed. As the swelling subsides the collar and cuff should be tightened until full flexion is obtained, and

this position should be maintained uninterruptedly for a period of three to four weeks. In the case in which no complications have arisen, the collar and cuff may then be loosened so as to allow 30 degrees of active movement of the joint, which active movement should be encouraged.

If it is found that the patient can voluntarily flex the joint to the position of previous fixation after three days, gradual relaxation is allowed, and usually at the end of four or six weeks movement from below a right angle to flexion is strongly controlled, and free use of the arm without any fixation may be permitted. It may be two or six months before extension is complete, but if reduction is complete and treatment is carried out on these lines there need be no anxiety as to the final result.

Forward displacement of the lower fragment may occur as a result, usually, of a fall on the flexed elbow. In these cases reduction will be established by traction and direct backward pressure transmitted to the lower fragment through the flexed forearm. In all recent cases of supracondylar fracture manipulative reduction should be possible. It must be remembered that because of the rapid formation of new bone late operation to restore alignment is difficult, and the results are seldom satisfactory.

Complications

The serious complications of this fracture which may occur are: (1) nerve injuries; (2) Volkmann's ischaemic contracture; (3) myositis ossificans.

(1) *Nerve Injuries.*—In supracondylar fractures the median is the nerve most commonly injured. The sharp lower anterior margin of the shaft of the humerus may cut it during the original displacement, or during reduction if the arm is hyperextended. In this series I have not seen a case of immediate division of the nerve, but three cases on which I have operated have shown the nerve frayed, adherent to, and stretched over, the sharp margin of the upper fragment. In some cases a paralysis of the ulnar or musculo-spiral nerve has appeared. In all of these natural recovery has taken place.

(2) *Volkmann's Ischaemic Contracture.*—The possibility of this, fortunately rare, complication of injuries to the elbow must always be remembered. This is less likely to occur when early reduction of the fragments is established, but the case must be under constant supervision for the first forty-eight hours in order to be sure that there is no interference with peripheral circulation. Undue congestion leads to rapid and irreparable destruction of muscle, so that its early recognition is of paramount importance. The early symptoms begin in a few hours; the hand is painful, the fingers are discoloured and numb, and voluntary power is diminished. This is the prelude to subsequent contractures, the treatment of which is not within the scope of this paper. Efforts to reduce the congestion should be directed to relaxation of flexion at the elbow, and, if necessary, reduction of tension in the antecubital fossa by incision.

(3) *Myositis Ossificans.*—This complication is to be suspected if it is found, after relaxation of the position of flexion at the end of the third week, that movement is not naturally restored. An *x*-ray may then reveal a shadow in front of the elbow. Passive movements, always contraindicated in injuries to the elbow, will increase the formation of new bone. The essential treatment is to continue rest of the joint in the position of flexion until either the bony deposit has reabsorbed or has completed its ossification. Early operation is wrong, as recurrence will surely follow. If operation is necessary it should be undertaken only when consolidation is complete and if the new bone is obstructing movement.

I am indebted to Dr. J. F. Brailsford for the line drawings which accompany this communication.

FRACTURES OF THE HEAD OF THE RADIUS AND CAPITELLUM INCLUDING EXTERNAL CONDYLAR FRACTURES OF CHILDHOOD*

BY

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My task in opening this discussion on fractures on the outer side of the elbow-joint is difficult, as brevity is essential, and as I am particularly interested in these lesions. Controversy is more likely to be centred on the treatment than on the method of production of the injuries; hence it is my intention to point out the relative frequency of these fractures and the ages at which they are prone to occur and then to proceed to the methods of treatment suitable for each type of fracture. The end-results can only be studied by examination of the limbs and, as this is not possible at the meeting, I refrain from the useless classification into good, moderate, and poor results, but I am particularly anxious to invite discussion on the difficulties. In view of the classification which has been employed in our clinic for some years, it is necessary to divert somewhat from the title rather than substance of this discussion.

During the three-year period (1933, 1934, 1935) of about 3,000 ambulatory fractures 206 were fractures of the outer side of the elbow-joint. In private practice, and at country hospitals, one sees only the severe cases and often those only requiring operative treatment, so all statistics are purposely limited to one clinic.

The table shows the classification and some points of interest with regard to the age of those injured.

Analysis of 206 Cases

		Total Cases	Under Age 14	Youngest Age	Oldest Age	Average Age
Radius	Head	124	6	10	68	22½
	Neck	37	17	7 (?3)	65	14
Humerus	Capitellum* ...	38	19	6	27	15
	Ext. Epicondyle	7	2	13	40	22
	Total	206	44	—	—	—

* Usually flake of diaphysis and capitellar epiphysis.

Fractures of Head of Radius

These occur most frequently between the ages of 25 and 35, and are of three types:

(1) A vertical fissure, descriptively termed a "chisel fracture";

(2) A fracture with one loose fragment;

(3) Comminution of the head, including the mushroom fracture.

(1) and (2). When there is little or no displacement the treatment consists in placing the forearm in full flexion and supination. If the limb cannot be brought into this position when the patient is first seen, the elbow is flexed as far as is comfortable by a collar and cuff or special sling, and daily adjustments will soon enable the desired position to be obtained. This position is retained for four weeks, then for one week the elbow rests at a right angle in a sling. After that, flexion and extension exercises are commenced. Although most patients have good function in two months, full function may not be obtained for four months.

(2) When one loose fragment is displaced, this should be removed by operation, preferably within one week of the accident, through an incision on the outer side of the joint.

* Read in opening a discussion in the Section of Orthopaedics at the Annual Meeting of the British Medical Association, Oxford, 1936.

In some of the cases the head is tilted owing to a further fissured fracture. In most cases it is advisable to limit the operation to removal of the loose fragment.

(3) In comminuted fractures the total circumference of the head is increased, by separation of the fragments. The operation of removal of the head and part of neck of the radius is necessary. My experience is that the best results are obtained by immobilization of the elbow for six weeks and then to operate.

If the arm is left still, ossification will not take place in the capsule during the waiting period, nor after the operation. As movement has not been allowed, there is no reason to suppose osteoarthritis will be more frequent in consequence of the delay, although it is probably inevitable in a few cases following any operation involving opening a joint. After this operation a full range of movement has been obtained, but usually extension is permanently limited by twenty degrees and other movements are full.

Fractures of the Neck of the Radius

These are usually transverse. A wedge-shaped piece of bone is often torn off the shaft from one side and is adherent to the head. Before the epiphysis has joined, the fracture is just distal to the cartilaginous plate, but the diaphyseal portion broken off is usually less than half the circumference of the neck.

(1) As a rule there is little displacement, or this may be a rotatory one. With little rotation or displacement, the treatment is similar to that of a fissured fracture of the head.

(2) In one-third of these fractures there was displacement, that is—a tilt to a considerable degree or displacement of the head right off the shaft, for it may be alongside the shaft, or be displaced to the inner side of the forearm. Operative treatment is indicated. Should the head be displaced as a whole, but also be broken into a number of fragments, it ought to be removed. In other cases reposition is possible and definitely indicated in patients under forty. In children it is very desirable, as removal of the head leads to cubitus valgus of extreme degree. This may be complicated by limited wrist-joint movement, radial deviation of the hand and prominence of the head of the ulna. The operation should be carried out within a week of the injury. If the head will stay in place after reposition, no fixation is necessary. If it will not remain in position it is often possible to fix it by a stitch of catgut through a tag of periosteum adherent to the neck or by passing a tiny needle through two drill holes distal to articular cartilage. In children the head may not stay in place without further fixation. I have reported a method of fixation by driving a bone peg through the articular surface of the head and up the shaft, so that at the end of the operation the peg was extra-articular and there was a minimum of damage to articular cartilage. Although the operation is difficult at times, I have continued to employ it with satisfactory results. I have seen on two occasions manipulative reposition of the head of the radius in children, when it had been displaced right off the shaft.

Fractures on Outer Side of Lower End of Humerus

In discussing fractures on the outer side of the lower end of the humerus, I am not including any which extend to the inner side, nor the comminuted fractures seen in adults associated with dislocation and fracture of the olecranon. Intra-articular fractures of the capitellum only appear to be very rare.

(1) In adults the line of fracture may be oblique from above the external epicondyle into the joint medial to the capitellum. More frequently the capitellum, part of the trochlea, and a piece of non-articular bone above and behind are fractured from the shaft. If there is no displacement, the elbow is put at rest at a right angle in a posterior plaster trough and *x*-rayed in the plaster to see that the position is still satisfactory. When there is displacement open operation is indicated. Reposition of the fragment is not difficult. In most cases fixation is not required, but if the fragments will not remain in place, a stitch passed through a drill hole made in the diaphysis will often hold the fragments, or a small bone peg an eighth of an inch across may be driven transversely through the fragment to hold it to the trochlea.

(2) In children the fractured piece consists of the capitellar epiphysis (that is, the capitellum and half the trochlea) and a flake of the diaphysis, usually off the back of the lower end of the shaft. When there is no displacement the fracture is treated after the manner of a supracondylar fracture with no displacement. When there is displacement, an open reposition is employed or non-union with cubitus valgus will occur. Formerly one used some form of peg or nail fixation, but this is seldom necessary. A catgut stitch through the diaphyseal flake to periosteum or muscle on the shaft will hold it in place. Some fixation is necessary or else the fragment will displace laterally. Normal elbows are obtained after efficient reposition. The cases of fracture of this area in childhood and young adults which have been neglected not only lead to a weak elbow, but sometimes ulnar nerve neuritis or paralysis.

(3) Fractures of the external epicondyle are isolated and uncommon injuries. Relaxation of the muscles by flexing the elbow until union has occurred is sufficient treatment.

Of the last 100 consecutive cases of fracture on the outer side of the elbow-joint, open operations have been performed on:

Head of Radius (8 cases):
1. For single loose fragments, 3 cases (fragment removed).
2. For comminuted fracture, 5 cases (head removed in 3 cases, pieces in 2).

Neck of Radius (6 cases):
1. Removal of head, 1 case.
2. Reposition of head with fixation: (*a*) by catgut or none, 3 cases; (*b*) by bone peg, 2 cases.

Humerus (5 cases):
1. Capitellum, 3 cases.
2. External condyle in adult, 1 case.
3. One operation for ulnar nerve paralysis.

FRACTURES OF THE INTERNAL EPICONDYLE OF THE HUMERUS*

BY

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(*With Special Plate*)

In 100 consecutive cases of recent fractures of the elbow joint treated at St. Bartholomew's Hospital sixteen involved the internal epicondyle of the humerus, and this represents about the average recorded in other statistics. The average age was 12 years. It is therefore not a rare injury. From the number of patients who seek advice on account of late complications it is clear that recognition and treatment of the original condition are often at fault.

General Considerations

The anatomical peculiarities of the internal epicondyle make it prone to injury in childhood. It has its own centre of ossification, which appears at the fifth year, and does not fuse until about the age of 16. During this period separation of the epicondyle may occur through the relatively weak epiphyseal cartilage. To the epicondyle are attached the internal lateral ligament and the common origin of the flexor group of forearm muscles. Thus

* Read in opening a discussion in the Section of Orthopaedics at the Annual Meeting of the British Medical Association, Oxford, 1936.

forcible abduction of the joint acting through these structures may cause avulsion of the epicondyle with or without dislocation of the joint.

The chief importance of this fracture is on account of the close association of the epicondyle with the ulnar nerve, which is frequently involved either at the time or later. Apart from the serious complication of ulnar paralysis, inadequate treatment may lead to non-union of the epicondyle, some limitation of movement, and lateral instability of the joint.

Clinically it may not be easy to detect the nature of the injury. An *x*-ray examination is most necessary, but interpretation may be difficult unless the appearance of the ossific centres at various ages is familiar. Films taken of the other elbow for comparison will be of great value. Before the age of 5 the epicondyle may be completely avulsed without radiographic changes.

Types and Treatment

(*a*) *A chip off the Internal Epicondyle or Fragmentation without Displacement.*—Such cases, which are quite common, all do well with conservative treatment. A "collar and cuff" sling for two weeks and then gradual active movements will lead to complete recovery.

(*b*) *Fractures of the Internal Epicondyle with Downward Displacement.*—This group constitutes about half the cases. The epiphysis has been avulsed and the strong pull of the flexor muscles maintains the displacement. If the swelling it not too great the epicondyle can be felt as a movable mass much larger than the *x*-ray appearance would suggest, lying below and in front of its normal situation. There is undue lateral mobility owing to the internal lateral ligament becoming detached with the epicondyle. The routine treatment is to keep the elbow fixed in flexion, but this does not achieve reduction of the fracture or subsequent union. The immediate results appear satisfactory, but these cases may be seen again in later years. Then it is found that the detached epicondyle is obviously out of place and is movable. Full extension may be impaired and the joint is unstable laterally. The complaint is of weakness and sometimes of ulnar neuritis set up by chronic irritation of the nerve as it passes behind the disordered lower end of the humerus. In such cases anterior transposition of the nerve will relieve the nerve symptoms, but little can be gained by interfering with the displaced epicondyle. Since by no closed method can the fracture be fixed in place these complications suggest that where practicable the method of choice is to operate and suture the epicondyle back in position. It will be found at the operation that the fragment is largely cartilaginous and that it has undergone rotation as well as downward displacement by the action of the muscles. By flexing the elbow it can be reattached in position by means of thick catgut sutures introduced by a stout curved needle, or occasionally by fixation with a beef bone peg. Flexion is maintained for three to four weeks by a plaster gutter splint, and subsequently active movements are encouraged but no physical treatment allowed.

(*c*) *Fractures of the Internal Epicondyle with Displacement of the Fragment into the Joint.*—This type of injury is now well recognized, and is of importance not only on account of the interference with the joint mechanism but because of the frequency of ulnar nerve involvement. To permit the entry of the displaced fragment some degree of dislocation must occur.

It is sometimes associated with gross *postero-lateral dislocation*. The ulnar nerve may then be dragged into the joint as well and be subjected to immediate pressure. More often the nerve pressure symptoms do not occur until later on, and are then due to chronic irritation or pressure. The presence of the dislocation is usually obvious enough, but the displaced epicondyle inside the joint may not be so readily detected. An *x*-ray examination should reveal this. If an attempt be made to reduce the dislocation alone it may become apparent that there is some hindrance to complete reduction in that extension of the joint remains limited and some valgus deformity of the elbow persists. This is due to the epicondyle remaining trapped inside the joint.

A lateral subluxation without complete dislocation is a more frequent occurrence. The joint is forced open on the inner side, and the avulsed epicondyle, pulled down by the muscles, enters and becomes caught up in the joint as it closes. Late cases are encountered in which the condition was not recognized at the time of the injury (see Special Plate). The signs and symptoms are very definite. Some degree of ulnar paralysis is present from the beginning. This is due to stretching of the nerve by violent abduction of the elbow. Movements, especially extension, are limited, and there is an increase in the "carrying angle," in addition to some lateral displacement of the forearm bones on the humerus. The absence of the bony prominence formed by the internal epicondyle may be detected. Opinions differ as to the best line of treatment. If the exact state of affairs is appreciated then manipulation may extricate the imprisoned epicondyle. The elbow is abducted to open the joint space on the inner side and then moved about to free the fragment. Forcible supination of the forearm with extension of the wrist and fingers may cause the epicondyle to leave the joint. The elbow is then treated in flexion. The immediate result may be satisfactory, but the question of the future must be considered. Non-union of the epicondyle will occur, and even if the initial ulnar nerve paralysis clears up a chronic neuritis may develop later. Open operation is therefore to be recommended. The ulnar nerve is first of all exposed, freed, and retracted; the displaced epicondyle is then retrieved from the joint with as little separation of the soft tisues as possible and reattached to the lower end of the humerus. The last and most important step in the operation is to transpose the nerve to the front of the condyle, where it can lie relaxed in a muscle bed.

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G. Deligdisch (*Thèse de Paris*, 1936, No. 32), who records eight illustrative cases in patients aged from 2 to 37, maintains that the diagnosis of wound diphtheria cannot be made on clinical grounds alone, as the local symptoms are not absolutely typical. The membrane in particular is often produced by other organisms than the diphtheria bacillus, and is frequently absent in cases of diphtheritic infection. Cases of infection by a pure growth of the Klebs-Loeffler bacillus are very rare, and as a rule there is a mixed infection. The diphtheria bacillus has never been found in a primarily closed lesion, nor in a closed metastatic abscess arising from a focus containing this organism associated with other germs. Writers who have been content to identify the diphtheria bacillus by its morphological appearance only have found a very high percentage (50 to 60) of wound diphtheria, whereas those who have differentiated the bacillus by biological tests have obtained only small percentages (0 to 6). The variety of toxaemia in wound diphtheria is explained by the fact that most of the cases on record occurred in adults, who were therefore immunized in most cases. The treatment of wound diphtheria is disappointing. Most of the chemical agents suggested for local treatment have no value as their action is merely superficial; the injection of antitoxin is not always successful.

FRACTURES OF THE OLECRANON*

BY

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I propose to dismiss briefly all fractures of the olecranon with the exception of the transverse fracture with separation. So long as there is no separation of fragments the injury need not be considered as a bony injury, and should be treated as a bruise of the elbow. And the essential treatment, in my opinion, should be immediate voluntary purposive movements of the elbow-joint (in other words, active use of the limb), with physiotherapy as an adjunct of secondary importance. There need be no fear of later separation of the fragments as the result of using the arm; at least it has never happened in my experience.

Transverse Fracture with Upward Displacement

Transverse fracture of the olecranon with upward displacement of the upper fragment—the usual form of fracture—presents a unique problem. Ordinarily if a bone is fractured, good function cannot be regained without bony union of the fragments. This is not true as regards the olecranon, and in this respect the fracture of the olecranon resembles the fracture of a sesamoid bone such as the patella. If a gap between the fragments is left, union occurs by means of fibrous tissue. This union, from the point of view of function, is as good as a bony union. It is not the fact that the upper fragment is united to the shaft of the ulna by fibrous tissue rather than by bone that constitutes a disability, but the fact that there is separation between the two fragments. Because of this separation, two disabilities follow:

(1) The triceps becomes weaker because when the muscle is at rest the distance between its origin and insertion is lengthened, and when it contracts half its energies are used in taking up the slack. The triceps muscle therefore is weak. But here we have a distinction between the fracture of the olecranon with separation and the fracture of the patella with separation; for whereas a strong quadriceps is essential for maintaining the erect posture, the strength of the triceps is less material to the patient.

(2) The second disability resulting from the leaving of a gap between the fragments is that extension of the elbow is limited by 20 degrees. Normally in full extension the beak of the olecranon is received into the olecranon fossa on the back of the lower end of the humerus just above the condyle. If the olecranon is displaced upwards (as it is in the fracture with separation) there is no hollow on the back of the humerus to receive the beak of the olecranon process when extension of the elbow-joint is attempted, and full extension is thereby limited. Again, comparison with the similar fracture of the patella shows that what is a major disability in the patella fracture is a minor disability in the olecranon fracture; because, although full extension of the knee is essential for normal knee function, full extension of the elbow is of less importance.

My endeavour has been to show that fracture of the olecranon and fracture of the patella, although at first sight similar, are different problems: that whereas the fractured patella with a gap should be operated upon, operation in the case of the fractured olecranon, although advisable, is not a necessity. Useful function follows if the separation is disregarded and the injury treated as one with no separation. In such cases my practice is to rest the arm in a sling at a right angle in the comfortable position, to make no attempt at approximating the fragments, and to encourage immediate active movements. As a rule the patient has regained, for her, a normal use of the arm in a few weeks; for it must be remembered that the patients are usually elderly or at least no longe young. Attempts to approximate the fragments exce by means of an operation seem to me to be doomed failure and only serve to postpone restoration of function

Operative Treatment

If operation is decided upon, the aim should be approximate the fragments, suture them, and hold the approximated until union has occurred. Four problem present themselves: (1) of when to operate; (2) of ho to suture; (3) of what suture material to use; and of after-treatment.

When to Operate.—This should be done either on t day of the accident or about ten days after the accide There is always at every operation a risk of sepsi Fresh blood is antiseptic. Stale blood is a culture mediu and not until it has become organized into granulati tissue does it cease to be liable to be inoculated by t surgeon.

How to Suture.—There is no sufficiently strong layer soft tissue to permit of reliance on soft tissue sutu alone; the bone itself must be sutured. The difficulty to obtain firm anchorage for the suture. There is a gre tendency for the suture to pull through the bone of t lower fragment. I know no way of ensuring against th In the upper fragment the suture is prevented fro pulling through the bone by the insertion of the tricep muscle; in the lower fragment there is no soft tiss covering the bone, and the pull of the suture is bound be parallel to the bone lamellae of the cortex. I am no trying to avoid this humiliating occurrence by drilling t shaft of the ulna transversely, passing the suture throu the hole and tying it on the surface of the bone, th threading one end transversely above between the top the olecranon and the attachment of the triceps musc and tying it to the second end below. Everyone, howeve has his own method of suture. I only wish to point o the frequency with which, in my hands at least, t suture pulls through the shaft of the ulna. Sometime the shaft of the ulna is comminuted, which render the accident more likely, and the anchorage to the lowe fragment should always be at some distance from t fractured surface.

What Suture Material to Use.—Unabsorbable materi has the disadvantage that if it remains loose it may a as an irritant and require removal. On the other hand is not easy to obtain absorbable material strong enou for the purpose. My experience is that even steel brea sometimes, and silver nearly always! Wire has the adde disadvantage that it is difficult to tie, and twisting t ends is not to be relied on. Wilson has recently advo cated the use of fascia, and although its use adds to t complexity of the operation it probably is the mo secure material.

After-treatment.—This assumes an importance wh one realizes how frequently the suture material eith breaks or tears out of the bone. I am a great advoca of early voluntary purposive movements following injury and I have tried to find a fool-proof method of sutur which would allow the patient to use the elbow imm diately after the operation. Reluctantly I must confe that I have failed. My present belief is that the elbo should be prevented from moving and the triceps p vented from acting—two distinct things—for fourte days after the operation. Movement can be prevente by a plaster cast reaching from the upper part of the ar to and including the lower radio-ulnar joint. Wrist a fingers may be free. It is not, however, necessary to h the elbow in extension for the purpose of keeping t elbow still. If the suture has been adequately perform it should be possible at the time of the operation to f the elbow fully without visible separation of the fr

* Read to the Section of Orthopaedics at the Annual Meeting of the British Medical Association, Oxford, 1936.

ments; splinting the elbow afterwards at a right angle (in the position of greatest comfort) will not then put strain on the suture. To prevent the triceps from acting—that is, to cut off nerve impulses from the cord to the muscles—it is only necessary to keep the arm to the side. Splinting the elbow in extension is of no assistance in this respect. Fourteen days of immobilization of the elbow and disuse of the triceps will be sufficient; at the end of that time the elbow may be freed from restraint. This is time enough, as we all know to our cost in the treatment of fractures elsewhere in the body, to disconnect the brain from the muscles. The use of the elbow will return gradually and there is little risk of a sudden violent contraction of the triceps causing the suture to break or pull out.

One last point: accurate approximation does not seem to be essential for bony union or for complete restoration of movement and function.

PLASTIC OPERATIONS FOR HYDRONEPHROSIS

BY

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(With Special Plate)

The idea of conserving a hydronephrotic kidney in which a considerable amount of potentially functional parenchyma remains—that is, a hydronephrosis mainly of the pelvic type—is by no means new. Many plastic procedures on the pelvic-ureteral junction have been suggested and tried, but, so far as one can judge, in this country and in most other countries they have been given up.

Professor Marion a few years ago stated that all kinds of plastic procedures on hydronephrosis were unsatisfactory. The failure of these measures has been variously ascribed to infection, new stricture formation, loss of continuity of peristalsis of the ureter, and so on, but the great bugbear has always been the early or late supervention of infection. Discussing these operations in the case of unilateral hydronephrosis, F. Hinman states that even if the obstruction is removed they are doomed to failure, for the opposite kidney, having undergone anatomical hypertrophy, will not release its function. In view of these authoritative and widespread opinions, to suggest that with good fortune even a pyonephrosis with renal tissue remaining can be converted into a healthy functioning kidney would, to many, appear ridiculous, yet that is what I hope to do.

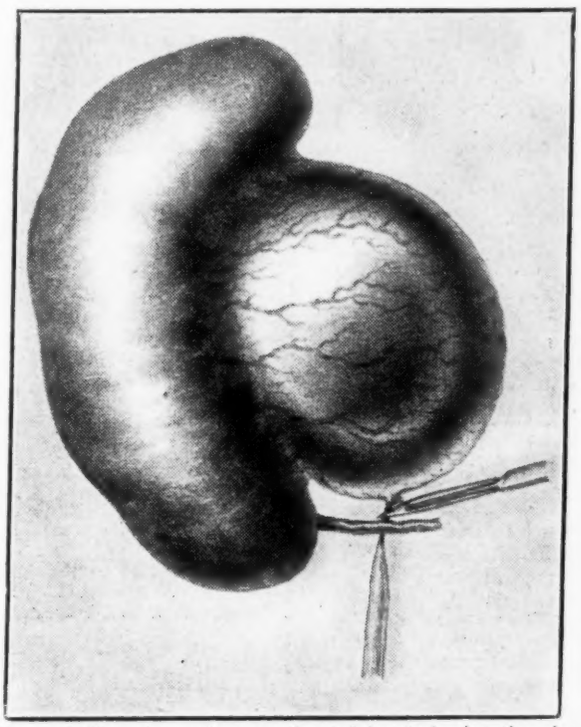

FIG. 3.—The obstruction at the pelvi-ureteric junction is identified and the ureter is severed from the hydronephrotic sac.

Before proceeding further it is necessary to point out that a small band of surgeons have continued to work on this subject, and it is to the writing of H. Wildbolz of Switzerland and of several accomplished American surgeons whose work I have reviewed for the *Medical Annual* that I owe most of my ideas.

Principles to be Observed

For a successful operation on a hydronephrotic kidney, whether it be a sole existing kidney or has a partner, certain principles must be adhered to strictly.

1. The hydronephrotic renal pelvis must be resected so as to reduce its capacity drastically. The reconstructed pelvis should be smaller than a normal one. When the obstruction is removed damaged renal parenchyma tends to regenerate, but a dilated renal pelvis remains as a bag to invite stasis and favour infection.

2. The kidney must be drained by temporary nephrostomy for ten days. With the diathermy knife a clean hole can be made through the convex border of the kidney and this accommodates a winged catheter.

3. The anastomosis should be supported for five days or more by an in-dwelling ureteric catheter.

4. It is unnecessary, and when they are large harmful, to divide abnormal renal vessels which are so often the cause of obstruction at the pelvic-ureteric junction.

Less important but possible factors which make for success are that the interior of the kidney shall be washed out twice daily with mercurochrome solution through the nephrostomy tube, and that as soon as the nephrostomy wound has closed the patient shall receive a full course of sodium mandelate.

CASE I

A man, aged 27, was admitted to hospital on account of anuria. There was a large stone in the bladder, with another stone in the lower third of the right ureter. Under spinal anaesthesia suprapubic cystostomy was performed. The stone in the bladder was removed, and the stone in the right ureter was extracted by slitting up the right ureteric orifice. The patient was then given continuous intravenous injection of isotonic sodium sulphate, which produced copious diuresis. Later the left kidney was shown by pyelography to be hydronephrotic, the hydronephrosis being mainly of the pelvic type. Three weeks after the first operation the left kidney was exposed, and the plastic procedure detailed in this paper was carried out. The wound healed within three weeks. Excretory pyelography shows that both kidneys are now functioning satisfactorily.

CASE II

In a woman, aged 31, laparotomy had been performed eighteen months previously for an abdominal condition, believed to be acute appendicitis. A hydronephrosis was found and aberrant renal vessels were stated to have been divided. The attacks of right-sided abdominal pain had continued. Pyelography showed a large hydronephrosis, mainly of the pelvic type. An operation similar to the above was carried out, a very large hydronephrotic sac being excised. The temporary nephrostomy closed four days after the tube was removed, and the kidney has been shown to be functioning admirably.

Case III

A woman, aged 20, for several years had had attacks of left renal colic. The last attack was severe ; it was associated with pyrexia and a large palpable left kidney. Pyelography showed an obvious hydronephrosis, mainly of the pelvic type (Fig. 1 on Special Plate). While awaiting admission her condition became worse There was much pain in the left loin, and the temperature ranged between 100° and 102° F. Operation was undertaken as a quasi-emergency. An enormously enlarged kidney was delivered ; as it was being brought to the surface the pelvis burst and a large quantity of pus escaped. The obstruction to the pelvi-ureteric junction was due to an exceptionally large abnormal renal artery which appeared to be the main blood supply to the kidney. The same plastic procedure as in the former cases was carried out. The post-operative course was fairly smooth, but it was three weeks before the nephrostomy wound closed.

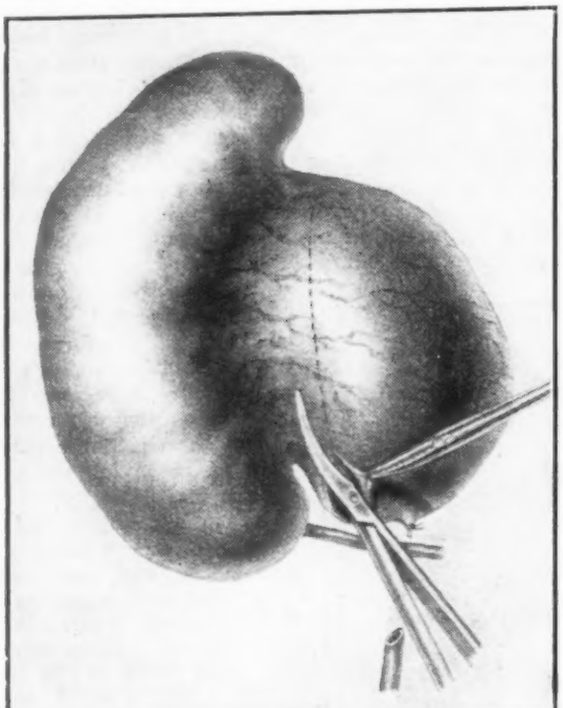

Fig. 4.—The hydronephrotic renal pelvis is resected so as to drastically reduce its capacity.

Pyelography (Fig. 2 on Special Plate) and other investigations show that the left kidney is functioning admirably, and cultures from the urine are sterile.

Case IV

A woman, aged 34, was admitted as a case of acute pyelitis. When the acute stage had subsided investigations showed an early right hydronephrosis. As the symptoms failed to respond to conservative measures operation was undertaken. The findings were similar to those in Case III, with the exception that there was less infection at the time of the operation. The post-operative course was smooth.

In three further cases, including a child of 5, the same procedure was carried out. In two, large hydronephrotic sacs were excised ; in all, the result was satisfactory.

Details of the Operative Procedure

The kidney is delivered and the site of the obstruction at the pelvi-ureteric junction is cleared (Fig. 3). The ureter is cut across obliquely so that the face of the cut surface looks towards the kidney pelvis. The kidney pelvis is then resected (Fig. 4), the objective being to remove as much of the hydronephrotic sac as possible, leaving just enough kidney pelvis for the cut surfaces to be united without tension. At this stage nephrostomy is performed, and a ureteric catheter is also introduced into the nephrostomy opening. The kidney pelvis is now reconstituted with catgut sutures from above downwards to within a quarter of an inch of the lower end, which is left open. Through the open end is brought the beak of the ureteric catheter. The ureter, which has been lying in the inferior part of the wound, is picked up, and the ureteric catheter is passed into its open mouth. This is done in front of abnormal renal vessels if they are present. The final procedure is to unite the obliquely cut ureter to the open end of the kidney pelvis over the ureteric catheter. This is performed as neatly as possible with the finest interrupted catgut sutures (Fig. 5). The method is a simplified modification of the operation described by S. Lubash.

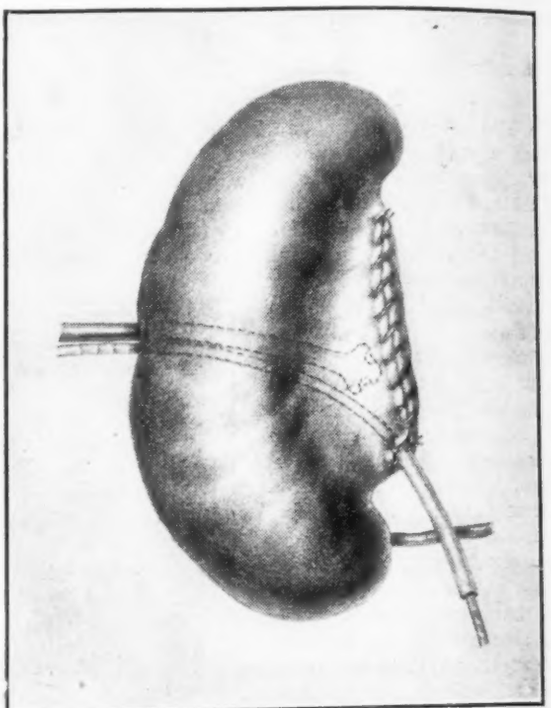

Fig. 5.—Temporary nephrostomy is performed, the cut edges of the base of the renal pelvis are united, and an end-to-end anastomosis is performed between the ureter and the lowest extremity of the renal pelvis. A ureteric catheter supports the anastomosis, and this is also brought out through the nephrostomy opening.

I should like to thank Dr. Edward Miles and the surgical staff of Oldchurch Hospital, Romford, for their help in the investigation and treatment of the original three cases.

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Plans of the seats to be erected on the front and side of Westminster Hospital from which to view the Coronation Procession are now being issued by the hospital authorities. The prices of the seats, of which there will be over 2,000, range from 10 to 50 guineas, and the entire proceeds will be devoted to the rebuilding of the hospital and its medical school. Early application for tickets is advised, as over 1,000 have already been taken.

X-RAY THERAPY IN CARCINOMA OF THE LUNG*

BY

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(With Special Plate)

Statistical evidence accumulated during the last ten years points to an increase in the incidence of primary carcinoma of the lung. It is now known that this condition constitutes 5 to 10 per cent. of all carcinomata, and for this reason is comparable with carcinoma of the large bowel and with other carcinomata which have received much more attention. An appreciation of this fact leads us to a consideration of the various possibilities in regard to treatment.

It is apparent that the choice of treatment lies between surgery and radiation therapy, and from a review of the somewhat extensive literature on the subject it would appear that most writers name surgery as the method of choice. In this respect, however, it is conceded by all that where the disease originates in a major bronchus surgical measures are possible only in the very early case. Apart from this, radical removal is possible only in the parenchymal type of lesion, and since this constitutes some 10 per cent. only of all cases the sphere of surgery would seem to be limited. Furthermore, radical surgery, even at the hands of the expert, carries with it a primary operative mortality which is quoted by various authors as 30 to 50 per cent. Graham,[1] in putting the case for surgery, reports only one case in the literature alive five years after lobectomy for pulmonary carcinoma. Carlson and Ballon[2] were able to find only thirty-five cases in which pulmonary carcinoma had been extirpated surgically, and out of these only six patients lived one year or longer. Young[3] recently reported a patient alive three years after lobectomy for carcinoma.

On the other hand, Kernan[4] reports a case of histologically proved bronchial carcinoma in which the patient was alive and well six years after high-voltage *x*-ray treatment, and in the series of forty-two cases recorded by Leddy and Vinson[5] ten of the patients who received *x*-ray therapy only were alive from fifteen months to four years after the diagnosis was made. Holfelder,[6] while not recording survival beyond three years, draws attention to the marked symptomatic relief which is obtained after radiation therapy, and this view is confirmed by Roberts,[7] who, despite the fact that life may not be appreciably prolonged, considers that the relief secured in relation to pain and cough justifies *x*-ray treatment even in advanced cases.

A Glasgow Investigation

During the years 1934 and 1935 thirty-six cases of primary bronchial carcinoma were referred for treatment to the *x*-ray department of the Western Infirmary, Glasgow. In five of these the condition was so advanced that treatment was not undertaken; and all of these patients died within two months. In sixteen cases the condition was such that intensive treatment did not appear to be justified, and palliative measures only were adopted. These were designed to give the patient symptomatic relief without adding to his discomfort by the production of a severe skin reaction. The average survival period in this group was three and a half months.

In the remaining fifteen cases radical treatment was attempted. The first seven patients were subjected to a treatment to which one might apply the term "semi-radical," in that it extended over a period of three weeks only, with an assessed tumour dose of 3,000 *r*. The average survival period in this group was five months. In the other eight patients a more radical procedure was adopted: the total period of treatment was extended and the total dose delivered to the tumour zone was correspondingly increased. In the later cases it was found possible to deliver an estimated dose of 6,000 *r* to the tumour zone in a period of six weeks. The response in this group has been appreciably better: four of the eight patients are still alive seven to twelve months after treatment, and the average survival period of the four patients who have died was extended to eleven months.

These observations would suggest that with improved methods an increased survival period is possible, and this suggestion has proved a stimulus to further endeavour. The following cases illustrate the type of response which has been obtained.

Case I

A female aged 59, when first seen in February, 1934, gave a history of cough and pain in the chest of four months' duration. For some weeks before she came under observation she had become progressively short of breath. There was no history of haemoptysis and no loss of weight. Clinical examination revealed complete dullness of the left side of the chest, which *x*-ray examination showed to be due to almost complete collapse of the left lung, apparently associated with a tumour in the region of the left hilum. Lipiodol revealed a definite bronchial stenosis in relation to the tumour mass. *X*-ray treatment was begun in February, 1934, through four ports of entry converging on the tumour mass. The response was satisfactory; cough and pain subsided, and within two months the lung was expanding, diaphragmatic excursion was practically normal, and there was a decrease in the size of the tumour mass. In July, however, the patient developed generalized metastases, to which she succumbed in October, eight months after treatment was started. During the subsequent course of the disease there was no recurrence of the pulmonary symptoms (see Plate, Figs. 1, 2, and 3).

Case II

An iron moulder aged 55 was admitted to hospital in October, 1934, complaining of pain in the chest of six weeks' duration, which took the form of a constant ache with acute exacerbations. There was an irritable cough, but no history of haemoptysis. Clinical examination did not reveal any signs in the chest and the blood picture was normal. *X*-ray examination, however, showed an apparently solid tumour in the middle zone of the left lung field towards the hilar region, but extending out a considerable way towards the lung periphery. There was no evidence of pleural effusion. Lipiodol examination carried out at this time indicated an obstructive lesion in relation to the bronchi supplying the lower portion of the left upper lobe. *X*-ray treatment was started in October, 1934, five ports of entry being employed. Within a few weeks the patient obtained symptomatic relief, and at the end of two months there was definite evidence of regression of the primary growth. The patient continued to improve; cough and pain disappeared, and he put on weight. His general condition remained satisfactory until the spring of this year, when he developed a metastasis of the spine, to which he succumbed in April—eighteen months after treatment was begun (see Figs. 4 and 5).

Case III

A police officer aged 44 was admitted to hospital in May, 1935, with a history of pain in the right shoulder, cough, and slight haemoptysis of three months' duration. Clinical examination revealed a zone of dullness corresponding with the right upper lobe, and *x*-ray examination showed complete obscurity of the upper half of the right lung field, apparently due to upper lobe collapse. *X*-ray treatment was instituted, and the patient improved steadily. The pulmonary lesion regressed and the lung re-expanded. The patient's cough disappeared and the haemoptysis cleared up entirely. He has gained weight, and is now back on full duty, symptom-free for over a year (see Figs. 6, 7, and 8).

* Read in opening a discussion in the Section of Radiology at the Annual Meeting of the British Medical Association, Oxford, 1936.

Case IV

A seaman aged 50 was first seen in August, 1935, when he gave a history of occasional pain in the chest during the previous three weeks, associated with slight haemoptysis. There had been no loss of weight, and the patient's general condition was good. *X*-ray examination at this time revealed a solid tumour in the left upper zone midway between the hilum and the periphery. *X*-ray treatment was started at once, five ports of entry being employed. The lesion responded well, and regressed almost completely. The pain in the chest disappeared, there was no further haemoptysis, and the patient returned to his work. He is alive ten months after treatment, and there has been no recurrence of his pulmonary symptoms.

Rationale of Treatment

In the evolution of radiotherapeutic technique for the treatment of malignant disease there has, of necessity, been considerable divergence of opinion regarding the most desirable method to employ. During the last five years or so, however, one has seen evidence of more general agreement among radiologists concerning what one might refer to as the fundamental principles. Of the individual factors involved probably the most important is total physical dosage. It is appreciated that from a purely biological point of view this must, of necessity, vary with the total duration of the treatment, but experience is gradually teaching us that for any given period of treatment there is, for different groups of tumours, a lethal dose which must be attained throughout the tumour zone before permanent regression of the lesion may be anticipated. The possibility of reaching this dosage level within any given period is dependent on a number of factors, and leads at once to a consideration of the second most important factor—time. It is almost universally held, particularly in relation to *x*-ray therapy, that a prolongation of the total period of treatment produces results of enhanced therapeutic value.

There is as yet insufficient evidence to determine whether these results are due to the fact that the longer period of treatment permits the delivery of a larger total physical dosage to the tumour zone without undue damage to the normal tissues, or whether the extended period, with the consequently greater number of individual treatments, increases the probability of all the malignant cells being irradiated during the vulnerable phase of their mitotic cycle. Furthermore, while accepting the principle of daily treatments with protraction of the total period, there is still much work to be done regarding the possible importance of extending the time of each daily administration, or, in other words, of treating at lower intensities.

There is now general acceptance of the view that any attempt at radical treatment must take the form of a single continuous course of irradiation. The dosage necessary is such that it has to be carried to the limit of tolerance of the normal tissues, and while these recover almost completely they are never able to stand again the same dosage, and it follows, therefore, that should the first attempt fail there can be no second one. A rigid observance of this principle is particularly necessary in any attempt at radical treatment of carcinoma of the lung. The lung tissue will probably just recover from the tumour lethal dose, but this tissue, if subjected to a subsequent course of treatment, will break down and a necrotic lung abscess will ensue.

In planning the scheme of treatment every effort should be made to secure homogeneous irradiation throughout a zone which is calculated to include all the malignant tissue. To assess this is a matter of the greatest difficulty, and yet on this decision, probably more than on any other, depends the success of the treatment. A scheme which fails to embrace the entire tumour zone is naturally foredoomed to failure, but it is equally true that the indiscriminate irradiation of a large volume of tissue will lead to failure—first, because the local tolerance limits of normal tissue decrease appreciably when a large volume is irradiated, and it then becomes impossible to attain the tumour lethal dose ; and, secondly, because the volume of tissue irradiated may be so large that the patient will succumb to the general effects of irradiation. It is apparent, therefore, that there is a physical limit to the size of a lesion for which treatment can be undertaken, and it would, in fact, appear to be a mistake to attempt radical measures where the lesion is obviously large.

In arriving at a decision in this respect cognizance must be taken of the fact that an apparently extensive opacity is not necessarily all due to tumour, and that it may be due to collapsed lung following stenosis of the bronchus. The presence of bronchial stenosis may be determined by lipiodol, and films taken at higher kilovoltage may be successful in outlining the tumour mass. On the other hand, it must be borne in mind that in the interval between the onset of symptoms and the patient seeking advice spread to the mediastinum has in all probability occurred, and, as a rule, therefore, the scheme should be such that the mediastinum will be included within the treated zone.

If we accept the principle of protracted irradiation and decide to treat for a period of six weeks or longer, then, from observations regarding the behaviour of carcinomata in other situations, it would appear that we must be prepared to carry the dosage in the tumour zone to a level in excess of 6,000 *r*. To do this without producing permanent skin damage it is necessary to use at least five ports of entry. Some radiologists would prefer to use a larger number, but this means that the areas must be smaller, and in my opinion this increases the risk of failure through inaccurate direction of the beam ; apart from the fact that even with theoretically perfect alignment the use of small fields limits the zone, which is effectively irradiated at the depth.

In planning the scheme of irradiation therefore one must first consider the extent of the volume of tissue at the depth which must be irradiated. This will consist of a cylindrical or spherical volume, and, in conjunction with the focal skin distance, will determine the size of the rectangular or circular ports of entry on the skin. In general terms it will be found that at focal skin distances of 40 to 50 cm. a port of entry 8 by 10 cm. will be selected, since at that depth converging beams of this size will embrace a cylindrical volume of tissue 10 cm. in diameter by 12 cm. long. It is doubtful whether, with apparatus operating at the 200 kV level, it is possible to irradiate successfully a volume larger than this. This opinion may be subject to revision in relation to plants operating at higher potentials.

Attention has already been directed to the necessity of avoiding skin damage, and here I should like to stress one point which in the past has not received the consideration it deserves. In a number of clinics it is the custom to treat one, or at most, two areas per day, with the result that each individual area receives treatment every second, third, or even fourth day only. While inevitably entailing more work, there would appear to be little doubt that by irradiating all areas each day an appreciably greater degree of skin tolerance is obtained, and for obvious reasons this is a factor of considerable importance in the treatment of intrathoracic lesions, where considerable difficulty already exists in relation to the delivery of a tumour lethal dose within the limits of tolerance of the skin of the chest wall.

In conclusion, I should like briefly to refer to the selection of cases. I have suggested that patients may be divided into three groups. First, those in whom the

disease is so advanced that simpler and more effective palliation may be obtained by morphine. Secondly, those patients in whom there is loss of weight, which indicates probable metastases, or, while their general condition may appear reasonably good, the extent of the lesion as determined by its physical dimensions or the existence of pleural effusion is such as to preclude any hope of successful radical treatment. In this group, as has been pointed out by other writers, palliative irradiation is justified, and, in my opinion, this is achieved most readily by a short course of treatment, extending at most to five days. In this respect one must adhere to the rule that palliation must not be worse than the disease itself, and for this reason no severe skin reaction should be incurred. Dosage should, however, be carried right up to the level of a mild erythema, and it will be found that at this level quite effective palliation may be obtained. Lastly, there are the cases in which an attempt at radical treatment would appear to be justified. The patient must show no signs of debility arising from the disease ; there must be no loss of weight ; and the lesion must be of such limited extent that on assessment it will be possible to include it entirely within the irradiated zone.

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Clinical Memoranda

Detachment of the Retina

Retinal detachment without a visible hole is usually considered to have a bad operative prognosis for two reasons: first, there is no direct guide to the actual seat of damage ; secondly, instead of being able to seal the hole directly, at most one can only hope that it will become secluded by the retina falling into contact with the area of operatively inflamed choroid. A case of recovery of full field and 6/6 vision may be worthy of record.

CASE REPORT

A girl, aged 17, came to the Free Eye Hospital, Southampton, in December, 1934, when her vision was found to be 6/6 in each eye separately, with a plano in the right eye and a lens of −0.5 dioptres combined with +0.75 dioptres cylinder, axis vertical in the left eye.

On April 11th, 1935, she returned, complaining that the sight of the left eye had become very much worse ; testing her with her glasses it was found to be 6/36 (one letter). There was no recent history of accident, but four years before she had had a blow from a cricket ball on the left side of the head. Looking at my hand, held up at one metre, she could not see the palm or fingers while gazing at the wrist ; and a perimeter chart showed loss of the field above the horizontal line. A flat detachment of the retina could be seen, forwards and below, but there was no appearance of a hole, nor was any found at any subsequent examination, in spite of careful search.

The patient was admitted under atropine, and kept quiet in bed for four weeks, at the end of which time, as the appearances were still the same, I did a diathermy surface cauterization at the 3.30 to 5.30 position on a clock-face, placing a curved " barrage " 6 mm. away from the limits of the ciliary body. The middle of the crescent-shaped area thus enclosed was then punctured with a red-hot electro-cautery, and when the subretinal fluid had drained away the red cautery was again inserted for a moment to the depth of 2 mm., after which the wound was closed by a conjunctival flap.

The patient was kept in bed with a double bandage for eight days, when it was seen that the retina was reattached ; the double bandage was retained for three more days, and then was replaced by pin-hole spectacles with side shields, which were made by using two of Dobson's squint occluders, the latter being eye-cups of thin black celluloid, which can be perforated in the centre with a hot knitting-needle, and slid along a cross-bar to suit the interpupillary distance.

She wore these at home for a month, and then vision with her spectacles had returned to 6/6, the field was full, but a small area of detachment could still be seen, far forward below.

In July, 1936, or nearly twelve months after the operation, I saw the patient again. The vision is perfectly restored, being 6/5 without spectacles ; the field shows no loss of contour whatever. The retina, far forward, shows the marks of trauma from operation, and as this site cannot be demonstrated in the field it would seem that a complete cure has been attained.

Joshua Keyms,
Honorary Surgeon, Free Eye Hospital, Southampton.

Coloured Lenses in Refraction

Many children disapprove of strangers and frequently express their disapproval in no unmeasured voice ; especially is this so if they first make the surgeon's acquaintance in the dimness of a room prepared for retinoscopy. Much time must frequently be spent in overcoming their shyness and in diverting the child's attention from oneself. In private practice it is possible to spend most of the period of consultation in making friends with the small patient with a consequent accuracy and rapidity of examination when confidence has been gained. Nor is it necessary for the child to be brought into a darkened room. On the other hand, all those who have to do clinic work will realize that it is impossible to allow half an hour, or even a half of that time, for each child ; that in most cases the child must be brought from the daylight into a darkened room, and, with pupils dilated from the previous use of atropine, the examination has to be commenced before dark adaptation has taken place.

Most children are responsive to colours, and to that end coloured toys in a consulting room " break the ice." In clinic work the nearest we can approach to the ideal of private practice is to endeavour to attract the attention of the child by the light reflected from the retinoscopy mirror. Some children look at it once and decide the performance is not going to be attractive enough to warrant their interest. In an endeavour to overcome this I used to shine the light through the red and the green glasses from the trial case held side by side, first through one colour and then the other. This was more attractive to the child, and it occurred to me that if they were lenses I should have some idea of the refractive error.

I have therefore had made a set of tinted lenses, and have found that nearly all children forget their surroundings in their interest in the colours. In experimenting over a wide range of coloured glass I had to obtain colours which were not too dark to obliterate the shadow but were yet dark enough for the child to perceive that a colour was present. Ultimately I selected the following colours in these strengths.

+ 2 D Sph.: Amber.	+ 4 D Sph.: Blue No. 4.
+ 2.5 D Sph.: Soft-lite No. 4.	+ 4.5 D Sph.: Nile green.
+ 3 D Sph.: Rose.	+ 5 D Sph.: Yellow.
+ 3.5 D Sph.: Pale green.	

The lenses are plano tints, to each of which is cemented a plano-convex lens of a different strength. This keeps the depth of colour the same throughout the lens. The lenses are graduated in half-dioptres, as in restless children

no greater accuracy can often be obtained, whilst without the colour one might get no result at all. On the other hand I can, if necessary, interpose the intermediate quarter-dioptre from the uncoloured lenses, and can obtain the result before the child is aware that the colour is not present.

It will be noticed that I have only plus spheres. This is because almost all the cases are children under the age of 5 years, sent from the county welfare centre to the school clinic on account of an internal squint, almost invariably of hypermetropic origin.

I have used these lenses now for over nine months, and I have found them extremely useful in obtaining a result which otherwise it would have been impossible to obtain without expending more time on one child than clinic work allows.

The lenses were made for me by Leighton, dispensing optician, Winchester, who reports:

"We regret we cannot give you precise definitions of the colours as they are merely taken from a wide range of colours used for various purposes, and have no definite identification. Duplicate samples of the colours have been set aside, and can be matched exactly if more lenses are required."

R. H. Balfour Barrow, M.D., D.O.M.S.
Honorary Ophthalmic Surgeon, Royal Hampshire County Hospital, Winchester; Oculist, Hampshire County Council.

Gumma of the Ciliary Body

The more severe forms of secondary and tertiary syphilis are nowadays very much less frequently seen than forty years ago. For instance, scales as large as limpet shells and of the same shape, designated rupia, are very rarely met with in this country, but I have seen one such when a student. As regards the eyes, syphilitic iritis, with the presence of gummatous nodules in the iris, now occurs only occasionally. In my experience a definite gumma of the ciliary body and sclera is extremely rare; in fact, I have only seen one, and that in 1900. This was in the days before the Wassermann test, and one had to rely on the history and the character of the manifestation itself, and confirm the diagnosis by the result of treatment.

The patient was a female, aged 26. She was admitted under my care as an in-patient in the Manchester Royal Eye Hospital on February 1st, 1900. The history was that fourteen days previously she could see with the left eye. It was now very painful. She had had "ulcerated eye" six months earlier. No sore throat, except such as she had been subject to since childhood. No rash. No loss of hair.

Right eye—media clear. Fundus and visual acuity normal. Left eye—marked injection of conjunctiva, especially at limbus. Haziness of cornea. Iris discoloured and swollen. Prominent mass involving sclera up and out. Anterior chamber full of hyaline exudate. Pupil irregular. Dull red reflection.

February 5th.—Eye still injected. Prominence becoming dark blue. Ciliary staphyloma thought to be forming. Gutt. atropin.; pot. iod. gr. xv; inunction ung. hyd.

February 15th.—Eye much quieter. Pupil fairly round and dilated. Anterior chamber clearer. Iris better colour. Swelling gone down leaving dark pigmented patch.

February 22nd.—Slight pericorneal injection. Iris almost normal colour. Some slight remains of exudate in pupil. The prominent mass entirely disappeared, and level of sclera then normal. At the site of the mass a dark ring of melanin pigment surrounding a patch lightly pigmented, remained. Dullish red reflection. No details of fundus visible. Vitreous opacities inclined to membranous form below. Tension slightly low. Left vision = 6/36.

The appearance at one time suggested a very malignant melanosarcoma, but the rapid improvement after administration of potassium iodide and inunction of mercury clinched the original diagnosis of gumma.

The case, owing to its rarity, appears to warrant putting it on record.

Manchester. J. Gray Clegg, M.D., F.R.C.S.

Reviews

THE RELIEF OF PAIN

What must be in many ways a unique book, entitled *The Relief of Pain: A Handbook of Modern Analgesia*,[1] has recently been published by Dr. Harold Balme. The author states that for many years the question of pain, both in its physiological and in its metaphysical aspect, has fascinated him, the simple question of what pain really is, and also on its more practical side the challenging problem of how its diagnostic significance may be appreciated, due heed be paid to its warnings, and resource mobilized for its relief and comfort. The book is an attempt to gather together the experience of many years, partly from the practice and writings of men and women all over the world, partly from the author's own clinical records, and to offer them in concise form to fellow members of the profession in the hope that they may prove of some assistance in meeting and attacking this daily problem. This volume is not intended to be a short cut to palliative treatment: it is intended to assist and not to eliminate careful and accurate diagnosis based upon thorough and complete examination. It is only when such investigation is satisfactorily accomplished that this handbook would attempt to suggest the remedies which have been found most efficacious in ridding the patient of the most dreaded of all symptoms, that of pain.

In Part I Dr. Balme describes in a general way the nature of pain, its function, and the anatomical pathways of painful stimuli. He discusses the difficult problem of assessing pain in the individual, one of the most troublesome riddles the practitioner is faced with in the daily routine of his practice. A chapter is given over to the classification of painful sensations and the criteria of intolerable pain. In Part II pain is considered in its general and systemic aspects, and Part III consists of a comprehensive thesis on regional pain. In the final section the therapeutics of analgesia are described, and two useful chapters on baths and packs and on movements and massage have been contributed by Dr. Matthew B. Ray. A full list of the chief analgesic drugs, their composition, therapeutic uses, dosage, and toxicity is given at the end of the book. It would be difficult to find a more complete and concise study of this very important subject, and the advantage of pain in all its aspects being considered within the scope of a single volume is too obvious to require to be stressed. An introduction is contributed by the Regius Professor of Medicine at Oxford. The fact that Dr. Balme's monograph has received the benediction of so high an authority is sufficient guarantee of its worth.

DISEASES OF THE EYE

The fact that an eighth edition of Parsons's *Diseases of the Eye*[2] has been called for barely two years after the issue of the seventh, and after half the interval between the sixth and seventh editions, is evidence enough of the appreciation in which this work is held. Among the several handbooks on ophthalmology by British and foreign authors this ranks high for its well-balanced presentation of the subject. The author has sought for and succeeded in attaining that most difficult of all the arts of the scientific writer, the systematic development of

[1] *The Relief of Pain. A Handbook of Modern Analgesia.* By Harold Balme, M.D., F.R.C.S., D.P.H. London: J. and A. Churchill Ltd. 1936. (Pp. 392. 12s. 6d.)

[2] *Diseases of the Eye.* By Sir John Herbert Parsons, D.Sc., F.R.S., F.R.C.S. Eighth edition. London: J. and A. Churchill Ltd. 1936. (Pp. 705; 360 figures; 21 plates. 18s.)

his subject which shall be at the same time definitive and yet impersonal. The new edition includes references to the modern operative treatment of detachment of the retina, and to recent physiological and biochemical researches, particularly on the role of histamine and acetylcholine, vitamins, and viruses.

On the matter of the treatment of detachment of the retina the author urges the necessity for treatment at an early stage—that is, before the retina has become so degenerated as to have lost all excitability to light. The treatment is tedious and absolutely useless unless minute directions are given and observed. Of Gonin's method of operation and its variations, he writes that this procedure is not suitable for detachments of long standing, or for those in which no hole can be discovered after repeated ophthalmoscopic examinations with the fully dilated pupil. Nor is it likely to succeed if the hole is very large or if there are numerous holes. Hence cases of wide disinsertions are rarely suitable.

There is a wealth of well-chosen illustrations; the coloured plates are excellent and almost render an atlas superfluous.

ALLERGY OF THE NOSE AND SINUSES

Dr. French K. Hansel has produced a large, comprehensive, and much-needed monograph, dealing with *Allergy of the Nose and Paranasal Sinuses*.[3] We are well aware of his previous publications on the histopathology of the nasal tissues in allergic conditions, in infections, and in combinations of both, and these are again treated at some length. In addition, works concerned with the clinical features of allergy as related to the whole field of otolaryngology are very fully abstracted, tabulated, and justly criticized. The early chapters are devoted to the fundamental principles, physiology, biochemistry, bacteriology, cellular reactions, and histopathology of the nose and sinuses—169 pages in all. The next two hundred pages deal fully with allergy in general, and could very well have been left out in a book of this title, as the general aspect is handled so ably in numerous other publications. The nasal manifestations of allergy, the cytology of the secretions, the roentgenographic examination of the sinuses, the diagnosis, differential diagnosis, and complications of the nasal manifestations of allergy occupy the next seventy pages. Again, another one hundred pages are devoted unnecessarily to the other varied allergic manifestations before dealing briefly with the ear and eye. A very instructive chapter is concerned with the treatment of allergy both from the physician's point of view and from the surgeon's. Four chapters (120 pages) are devoted to hay fever, the causative pollens, and their botanical distribution, the immunology, symptomatology, diagnosis, and treatment of the condition being very clearly and fully outlined. The book ends with case reports illustrating the clinical types of nasal allergy.

Hansel discusses three types of change in the nose—allergy, infection, and allergy plus infection—and he compares the gross and microscopical changes in these types and sets them out in a very useful table. Polypoid degeneration is definitely looked upon as allergic in origin. The diagnostic value of repeated cytological examination of the secretions is stressed. Any *x*-ray, transilluminative, or bacteriological findings must be correlated with other data, and they should never play a primary part in diagnosis, as they are beset with many fallacies in interpretation. Hansel states that, in the final analysis of the operative indications upon the nose and paranasal sinuses in allergy, it is evident that each and every case presents an individual problem. Primarily, allergic methods of treatment must be instituted. The pathological conditions still remaining after appropriate treatment may require either conservative or radical procedures. In addition to a careful analysis of the clinical history, every available laboratory procedure should be carried out in order to utilize valuable information which cannot be obtained from the clinical history or from the direct inspection of the nose and paranasal sinuses.

Nasal ionization in allergic conditions is very fully discussed, and it is argued that the local or general desensitizing effect of ionization is comparable to that resulting from the local treatment of the nose by other physical or chemical agents, which induce a local inflammatory reaction. Hansel draws attention to the possibility of producing permanent destructive changes in the nasal mucosa, the development of complicating suppurative sinusitis, loss of the sense of smell, and the production of complicating asthma, especially in patients who have not had asthma previously.

The work, no doubt, is intended as a reference handbook for the specialist in allergy or otolaryngology. It can be recommended as giving a very full summary of the literature right up to date, supplemented by the personal experiences and investigations of the author over a period of fifteen years. The illustrations are very good, the references fully tabulated, and the index well set out.

ALCOHOLISM IN GENERAL PRACTICE

No one can practise medicine for even a short time before encountering alcoholism, both secret and overt. It will present difficult problems, both medical and social. For that reason we welcome the sane, balanced, unemotional exposition of those problems in the book before us.[4] Dr. A. E. Carver deals with the psychology and general management of such cases, Dr. T. C. Hunt with the general and physical effects of alcohol, and Sir William Willcox with the medico-legal aspects of alcoholism, including its share in exacting the toll of the roads, a subject of great and increasing importance.

The manifest evils of alcoholism excite in many people a reaction which if comprehensible is emotional rather than rational. Of this the disastrous failure of America's gigantic experiment in prohibition is the outstanding example. In general we agree with McCurdy's dictum, "The alcoholist is, before he even touches a drop, an abnormal person." It is often said that men and women drink for different reasons, but this is to miss the factor common to both, for they both drink to blunt the edge of reality. It is true that the man generally indulges in social drinking because it enables him to pose as a jolly good fellow when he feels he really isn't one, while in the past at any rate the woman was more often a secret drinker to appease her inordinate self-pity for not being appreciated at what she considered her real value. But this distinction is by no means absolute; secret drinking is not unknown in men, and the modern relaxation of conventions has certainly increased the frequency of social drinking among women. Dr. Carver points out that only the abstemious are able to be connoisseurs, while to the addict "all whisky is good whisky." This shows that alcohol is taken for its physiological effect, which, as is generally accepted to-day, is the removal of inhibitions. Thus mild indulgence fosters social intercourse; without it the spate of after-dinner oratory would be intolerable. But the indulgence of an addict allows

[3] *Allergy of the Nose and Paranasal Sinuses. A Monograph on the Subject of Allergy as Related to Otolaryngology.* By French K. Hansel, M.D., M.S. London: H. Kimpton. 1936. (Pp. 820; 58 figures. 42s. net.)

[4] *Alcoholism in General Practice.* By A. E. Carver, M.A., M.D., D.P.M., Thomas Hunt, B.A., D.M., F.R.C.P., and Sir William Willcox, K.C.I.E., C.B., C.M.G., M.D., F.R.C.P. London: Constable and Co. Ltd. 1936. (Pp. 131. 7s. 6d. net.)

him to take the lid off his own private hell, and eases him of unbearable repressions.

The paroxysmal dipsomaniac who totally abstains between his attacks is rare and of somewhat different pathology, for here the repressions seem to reside deep in the unconscious, and alcohol is used to drown their attempts to reach the level of action. As it is freely asserted that such repressions usually relate to sexual perversion, it is interesting that Dr. Carver found this to be so in only one of his cases. He regards this type as a recurrent psychosis, and, as he truly says, the patient is quite aware that he is working up to a state which will culminate in an outbreak. He could, if he would, place himself under treatment at this stage, but he almost invariably remains secretive, and pretends that everything is all right with him. Even without the alcohol he goes through cycles of intense depression and irritability, and it is probable that the regularity of the periodicity depends upon internal, possibly metabolic, factors. This view brings paroxysmal dipsomania into relationship with the manic-depressive psychosis and separates it from ordinary alcoholic addiction.

The great and abiding difficulty in treatment is the lack of an *effective* desire to be cured. Mere fear of losing his job, or financial stringency, is not enough if the wish to drink is still there. Psychological explanation and education therefore form an essential part of the treatment. There are no short cuts to a cure. On this and all other aspects of a complex subject this book is full of helpful information.

THE INDIVIDUAL CRIMINAL

Of the making of books on crime there is no end, especially in America, but a high proportion of American authors write from an individual standpoint and contribute something new and stimulating to the literature. Dr. Karpman has written a book[5] about four cases, in each of which he has studied closely not only the criminal's history, but also his mental constitution and processes. He has wisely and refreshingly avoided the error of generalization, and for that reason his four complete dossiers are obviously of value to students of the criminal mind. One idea which he stresses particularly is the fallacy of the rather common assumption that the prisoner is a kind of neurotic patient. Recognized neuroses form a relatively inconspicuous proportion of criminal cases, and the great majority of criminals must be approached by a method different from that used for neurotics. Karpman's study in criminal psychogenetics is as scientific as any similar work which has appeared in this field, for it is the essence of science first to study particular phenomena. He does well, also, to point out that essentially criminal conduct is not by any means confined to what the law calls criminals. He would speak of criminality in a large generic sense as meaning the anti-social feelings that each citizen carries within him. Criminality in this sense is, as he says, one of the greatest problems of to-day. He is pessimistic about the psychotherapy of criminals, chiefly because neither society nor the criminal himself believes that he is a sick man or sees reason in his undergoing treatment. Even if a criminal is prepared for treatment the environment of the prison—which in America seems to be much worse than in this country—utterly militates against psychotherapy by its complete lack of any positive emotional components. Karpman's work confirms the axiom that to make any advance possible society's attitude to the criminal must be reformed *pari passu* with reform of his attitude to society.

[5] *The Individual Criminal: Studies in the Psychogenetics of Crime.* By Ben Karpman, M.D. Washington, D.C.: Nervous and Mental Disease Publishing Co. (Pp. 317. 4.50 dollars.)

THE LOCUMTENENT

An admirable little book entitled *Handbook for the Locum Tenens,*[6] by Dr. T. C. Scott Webb, has been published by the Oxford University Press. It is capable of being of great service both to medical practitioners acting as locumtenents and to practitioners who engage them in that capacity. It should, if properly and carefully used, save both parties much time and trouble on engagement, during the conduct of the practice, and on the return of the principal to resume his duties. It may be described as consisting of three parts. The first of these consists of general advice of a very practical and sensible character arising out of the initial comprehensive precept, "Endeavour to conduct the practice as you would wish to have a practice of your own conducted in your absence." A second part describes, very succinctly and clearly, a simple method of keeping a combined day book, account book, and visiting list, and includes notes on what it is essential that a locumtenent should know and remember with regard to deaths, inquests, notifications of various kinds, the title to treatment of insured persons, the help that can be obtained from public health and public assistance departments of local authorities, the procedure on treatment under the Road Traffic Act, 1934, and other like matters. There follows a section under headings alphabetically arranged with blank pages opposite on which can be noted important addresses, including those of consultants, telephone numbers, maternity cases expected, and particulars relating to hospitals, nurses, ambulance, pathological examinations, and various public officials who may have to be communicated with. There are a number of blank pages at the end of the book for any necessary addenda. It is suggested that entries on all blank pages might be made in pencil, and that thus the book could remain available for use in several practices. The book is of convenient size and shape, so that it can easily be carried in pocket or bag.

Notes on Books

The Pharmacopoeia and Guide of the School of Tropical Medicine, Calcutta (The Art Press, Calcutta, Rs. 2.8), contains, in addition to the usual formulary and tables, an interesting section which describes methods of diagnosis and treatment of common tropical diseases. This is a subject in which rapid changes have occurred in recent years, and hence the short summary of the methods in current use at this school is very instructive. For example, choleraphage is recommended as the specific treatment for cholera, and bacteriophage therapy is mentioned in the treatment of bacillary dysentery. Berberine is recommended as the routine treatment for oriental sore. In the case of chronic amoebic dysentery carbarsone and yatren are recommended as well as emetine bismuth iodide and kurchi bismuth iodide. In general the pocket volume contains a large amount of useful information, and the excellence of the binding and printing deserves mention.

Peripheral Hearts,[7] by Dr. A. Mougeot, is a monograph dealing with the spontaneous contractions of arteries, veins, and lymphatics. This is a subject which presents serious experimental difficulties, and in consequence the evidence is scattered and incomplete. The author has collected the evidence and supplemented it by a considerable amount of research work. His general conclusion is that the rhythmic activity of the arteries and veins has an important influence on the maintenance of the blood pressure.

[6] *Handbook for the Locum Tenens.* By T. C. Scott Webb, M.R.C.S., L.R.C.P. London: H. Milford, Oxford University Press. 1936. (Pp. 72. 3s. 6d. net.)

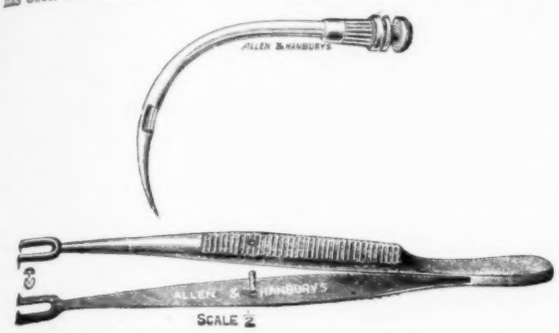
[7] *Les Cœurs Périphériques.* By A. Mougeot. Paris: Vigot Frères. 1936. (Pp. 148; 21 figures. 15 fr.)

Preparations and Appliances

MODIFIED REVERDIN NEEDLE

Mr. PERCIVAL P. COLE (London, W.1) writes:

The needle illustrated is a modification of the well-known Reverdin slot-eyed needle, and can be supplied for use with any standard holder. The eye is square and lies on the upper aspect of the shaft. It is large enough to lodge a strip of fascia lata of a reasonable width in such a way that it is gently gripped by the movable stilette as the spring handle of the holder is released. The bulk of the needle has been increased to an extent just sufficient to accommodate



the larger eye without in any way weakening the needle. The strip of fascia is fed to the needle by the other instrument illustrated; this is a modification of the feeder devised by the late Sir Charles Ryall and was made for me many years ago. The use of these two instruments in the manipulation of fascia lata has been tried out by my colleagues and myself. We have found that herniae can be dealt with in a practical easy way and with a minimum of damage to the tissues involved. These instruments have been made by Messrs. Allen and Hanburys Ltd., 48, Wigmore Street, W.1.

UROLOGICAL EXAMINATION AND OPERATING TABLE

Mr. A. SEBBA (Blackburn) writes: The urologist who from choice or necessity is doing his own *x*-ray work is often handicapped by lack of the room which a multiplicity of tables and apparatus require. He may also be called upon to operate at a patient's house, or in nursing homes devoid of suitable equipment; the table to be described below was designed to meet these difficulties. It is light and compact, and can for convenience of transport be taken to pieces, and, what is its main advantage, it is convertible into: (*a*) an

examination couch, (*b*) operating table, and (*c*) urological *x*-ray couch. When assembled the length is 76 in. by 19 in. wide. The Potter-Bucky diaphragm is a separate unit, easily placed and taken off the table. It is 24 in. wide, and fitted with the usual compression band. The table is built on a solid tubular steel frame mounted on three castors. One of these castors is connected to the frame by an articulated lever, and can be thrown out of action for the purpose of immobilizing the table. The top is made in two sections, one of which, the foot end, is removable. The main section is hinged to the supporting framework, and can be tilted in either direction, approximately 35 degrees down and 75 degrees upwards, by means of a bilateral winding gear. Two leg supports are fixed to the frame near the pivotal point; they are movable in all directions, and are let down out of the way when not required. The head end of the table is elevated 4 inches above the rest of the table frame, so as to be level and in alignment with the curved Potter-Bucky diaphragm, which is placed on the lower end of the table, and is held in position by four pegs. On either side are brackets for holding the adjustable shoulder supports for the Trendelenburg position. We have now an *x*-ray examination couch on which the patient can be cystoscoped and subsequently *x*-rayed in the recumbent position if the foot portion of the table is attached, or in the lithotomy position if the articulated leg supports are used. The drainage pan under the table is so arranged that it can be used in either posture. The change from an *x*-ray couch into an ordinary examination couch or operating table is effected by lifting the Potter-Bucky diaphragm off and placing a light steel frame with metal top in position. The reason for this additional steel frame is the inconvenient width of the Potter-Bucky diaphragm, which makes it unsuitable as an operating

table top. This light steel frame is of the same width as the head end into which it merges. A little below the junction, at a point corresponding to that of the lower end of the thorax, a gutter breaks the continuity of the top, and into this gutter is placed a Morson kidney bridge, complete with arm rest and back support. With a sponge rubber mat covering the top, the transformation from *x*-ray couch to operating table is completed. The foot portion of the table is articulated, and held in the desired position by an extensible bar and locking lever; it is also covered with a sponge rubber mat. The table and accessories have been made for me by the Genito-Urinary Manufacturing Company Ltd., 28A, Devonshire Street, London, W.1.

A FINGER DRESSING

The manufacturers of Norvic bandages have just introduced a new finger dressing—the norvelast. This dressing is sterile and adheres only to itself and not to the skin. It is prepared in suitable lengths and widths in boxes of twelve (price 1s.), and is applied simply by placing the dressing-pad on the abrasion or wound, stretching round the finger to give the required tension, and pressing the fabric firmly on to itself. It will remain there until removed and will leave no sticky substance round the finger. Samples and literature may be obtained from Messrs. Grout and Co., Ltd., 35, Wood Street, E.C.2.

PUBLIC HEALTH IN THE UNITED STATES OF AMERICA*

II.—INFECTIOUS DISEASE

BY

RALPH M. F. PICKEN, M.B., Ch.B., B.Sc., D.P.H.

MANSEL TALBOT PROFESSOR OF PREVENTIVE MEDICINE, THE WELSH NATIONAL SCHOOL OF MEDICINE

Although all parts of the U.S.A., except Alaska, lie south of the most southerly limits of Great Britain, the northern States are subject to more rigorous winter conditions than ours, balanced by higher temperatures in the summer. Their climatic conditions may, however, be regarded as temperate, and the incidence of infectious disease is similar to ours. Vast areas in the south, on the other hand, are subtropical and continuous with lands nearer to the Equator, where the standard of sanitation is low. In these areas problems of infection are encountered which resemble those of some of the British colonies rather than of Great Britain itself. Moreover, the pre-war stream of immigration has carried the infections of all parts of the Old World into the New, a circumstance which accounts for the strict measures of quarantine that have been exercised by the U.S. Public Health Service, and must also have constantly upset the indigenous immunity of its population. Infection in the U.S.A., therefore, presents almost all the problems of world epidemiology in miniature, and the preoccupations of the health officer in one State may be very different from those of his opposite number at the other end of the country.

New, and Variants of Old, Infections

It may be partly because of the new biological field provided by this great mixed population of old residents and immigrants that so many new types of infection, or variants of old, have been detected in America, although the explanation, in most cases, is probably to be found in the vigour and skill with which inquiries have been pursued by the U.S. Public Health Service, by the Foundations, and by some of the States and large cities. The modern replacement of variola major by variola minor seems to have begun in the U.S.A. Tularaemia was discovered there, though it has since been identified in Japan, Russia, Norway, Sweden, and Canada. St. Louis seems to have a type of encephalitis peculiar to itself, and at least one other variant with an unusual seasonal prevalence has been recently detected, in addition to another quite distinct virus disease which has been called choriomeningitic encephalitis—a septicaemia. Food poisoning arising from staphylococcus toxin seems to be established as a definite form of disease in the U.S.A., though not yet elsewhere. So far the only records of the conveyance of poliomyelitis by milk come from that country. America has also its peculiar strains of rickettsiae, causing endemic typhus and Rocky Mountain spotted fever, the latter being the subject of investigation at a laboratory established for the purpose in Montana by the U.S. Public Health Service.

The Common Infectious Diseases

Apart from these interesting problems, the U.S.A. suffers from the commoner infectious diseases to an extent slightly different from this country. There is a fairly large but falling annual toll of small-pox cases, although mostly of the mild type which we call variola minor (in 1933, 6,460 cases were reported from forty-seven States, with thirty-five deaths). Typhoid and paratyphoid have also declined, although less rapidly, more than 20,000 cases being reported each year. Whooping-cough has in recent years consistently caused more deaths than measles, though twice as many cases of the latter as of the former are notified. Diphtheria is still fairly prevalent, though less so than in England and Wales, and, up to 1933 at least, caused more deaths each year than whooping-cough, measles, or typhoid. Scarlet fever remains at a constant level, although the proportion of cases to population reported annually is below the British rate. Judged by the number of deaths the severity of type is comparable to our own. It is unlikely that notification is complied with as extensively, at least in the wide rural areas, as in Great Britain. The numbers of cases of several diseases (if known) in States varying in number from thirty-five to forty-seven, and the deaths from the same causes in 1933, are given in the following table:*

U.S.A. Infectious Diseases, 1933

Disease	Cases	Deaths	Deaths per 100,000 Population
Chicken-pox	223,486	127	0.1
Diphtheria	59,378	4,852	3.9
Enteric fever	23,287	4,373	3.5
Influenza	—	31,706	25.3
Malaria	—	4,463	3.8
Measles	396,941	2,167	1.7
Cerebro-spinal fever	2,606	1,105	1.0
Mumps	83,179	45	0.1
Pneumonia (all forms) ...	—	84,239	73.4
Poliomyelitis	4,855	657	0.6
Scarlet fever	210,982	2,438	1.9
Small pox	6,460	35	Less than 0.1
Tuberculosis (all forms) ...	—	73,809	59.0
Tuberculosis (respiratory) ...	—	61,510	53.2
Whooping-cough	177,233	4,162	3.3

Special Problems

Poliomyelitis occurs in epidemic form in different localities of the U.S.A. with considerable frequency, and has been the subject of special campaigns for the promotion of serum treatment and, more recently, of attempts at vaccine prophylaxis. The scepticism with which serum treatment is now regarded in America, and the recent revelations as to the danger arising from the use of some of the vaccines under trial, are well known to the readers of medical literature in this country.

Malaria has occupied a great deal of the attention of the U.S. Public Health Service and the State departments. Some fifty years ago more than half the area of the country, spreading from the eastern seaboard, was malarious. Now the disease is practically confined to areas in the south Atlantic, west, south, and central regions (the biggest being the drainage basin of the Mississippi River), and to relatively small patches in the mountain States of the south-west. The vector is *Anopheles quadrimaculatus*, and preventive measures have been directed toward its extinction. Extensive drainage schemes have been carried out, new larvicides are being tried, and economical methods of screening even the poorest houses have been devised. Anti-malaria drainage has been one of the important occupations of emergency relief labour under the "New Deal." As an example of the malaria position, an interesting situation is to be seen in the Tennessee Valley, where part of an immense scheme of reclamation by the Tennessee Valley

* This is the second of a short series of articles on public health in the U.S.A., contributed by invitation.

* From the Annual Report for 1934 of the Surgeon-General of the Public Health Service of the U.S.A.

JAMES F. BRAILSFORD: PATHOLOGICAL CHANGES IN BONES AND JOINTS INDUCED BY INJURY

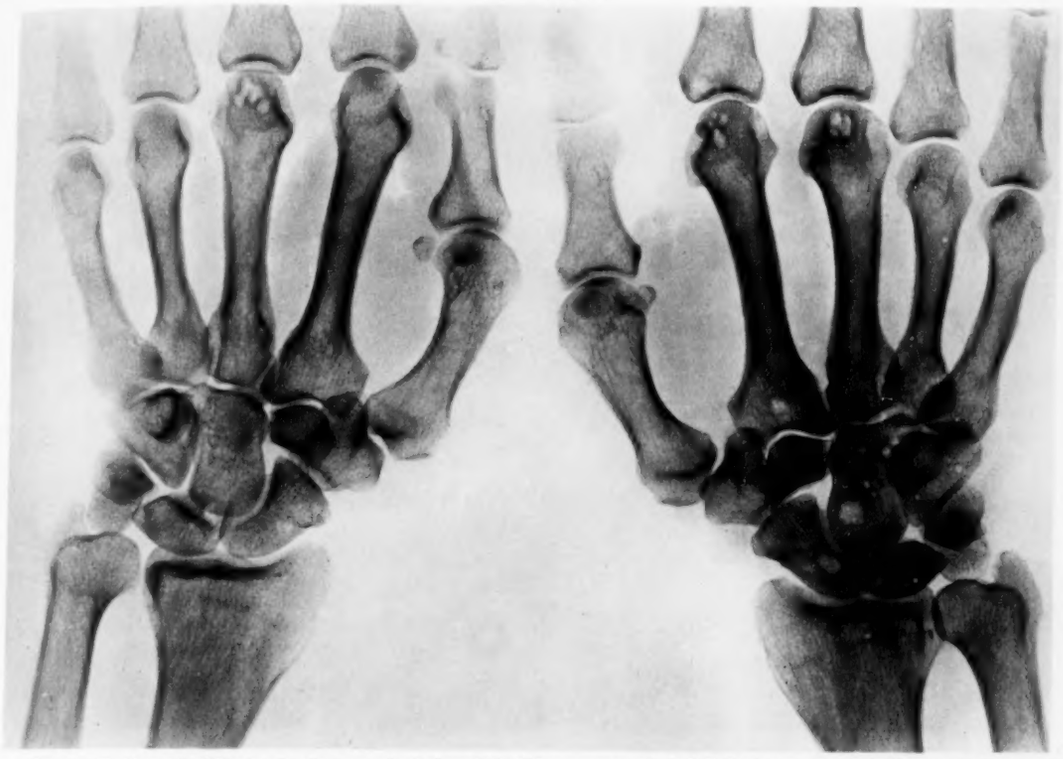


FIG. 1.—Radiograph of the hands of a man who had worked with a compressed air drill for ten years. Note the rounded areas of cancellous destruction in the heads of the third metacarpal of the left hand, the heads of the second and third metacarpals of the right hand, and the carpal bones of the right hand. Similar changes were seen in the capitellum and the head of the radius.

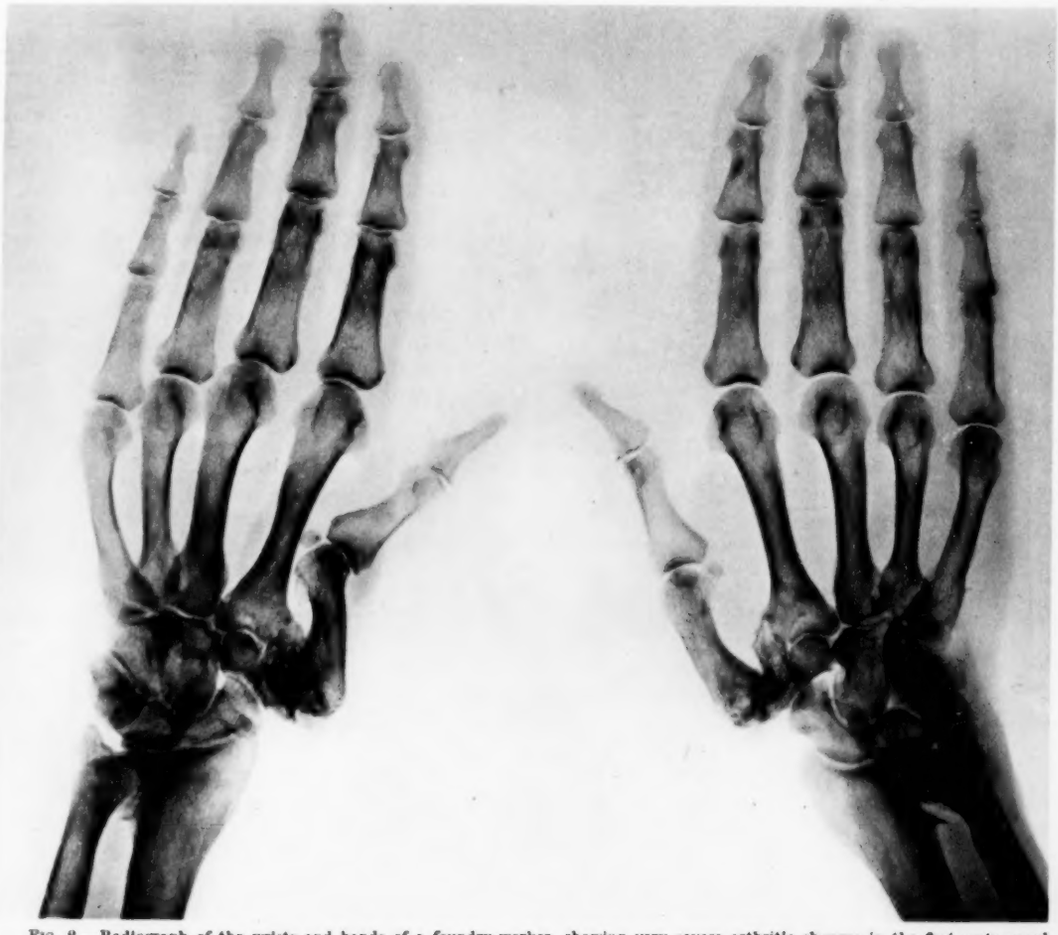


FIG. 2.—Radiograph of the wrists and hands of a foundry-worker, showing very severe arthritic changes in the first metacarpal, carpal, and inferior radio-ulnar joints on both sides.

FIG. 3.—Radiograph of the left hip-joint of a man aged 27 (22.3.27), showing a dislocation due to a fall.

FIG. 4.—Radiograph of the same hip-joint as Fig. 2 (17.8.27), showing rarefaction of the upper part of the femoral head and new bone formation in the soft tissue around.

FIG. 5.—Radiograph of the same hip-joint as Figs. 2 and 3 (14.12.31), showing consolidation of new bone causing marked restriction of movement. The superior lip of the acetabulum is sclerosed.

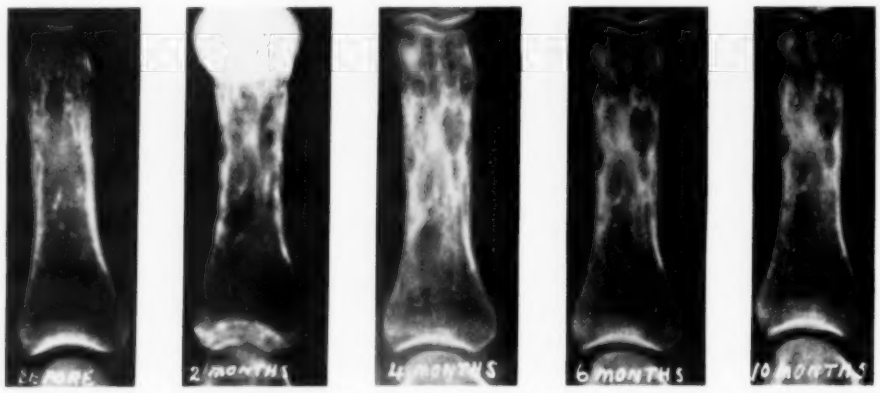


FIG 6.—Serial radiographs of a proximal phalanx before, and two, four, six, and ten months after surgical treatment of one of the metacarpals. Note the changes in the cancellous structure induced by immobilization of the hand.

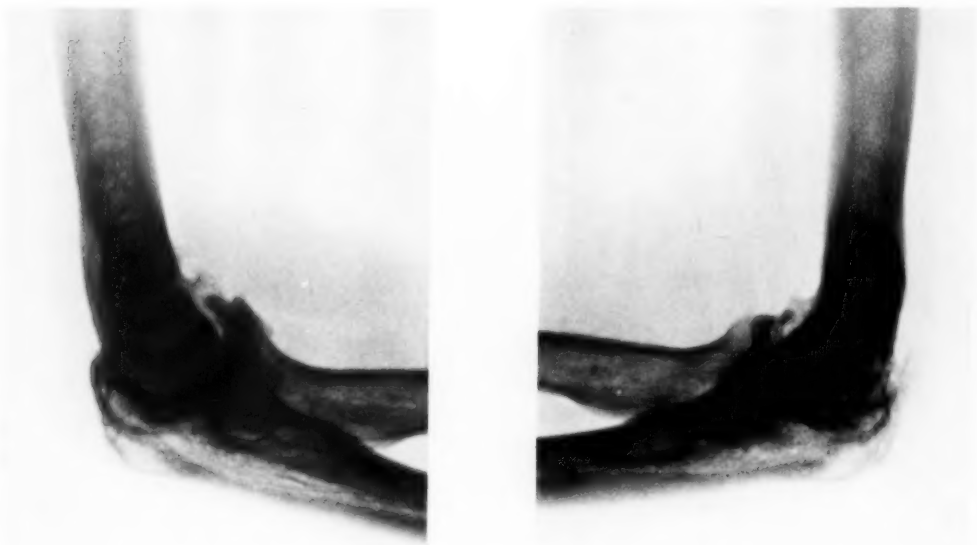


FIG. 7.—Radiographs of the elbow-joints of a foundry-worker. The elbow-joints were continually subjected to minor traumata and gradually marked limitation of movement developed. Such disablement when so produced does not entitle the man to compensation under the Workmen's Compensation Act.

HAMILTON BAILEY: PLASTIC OPERATIONS FOR HYDRONEPHROSIS

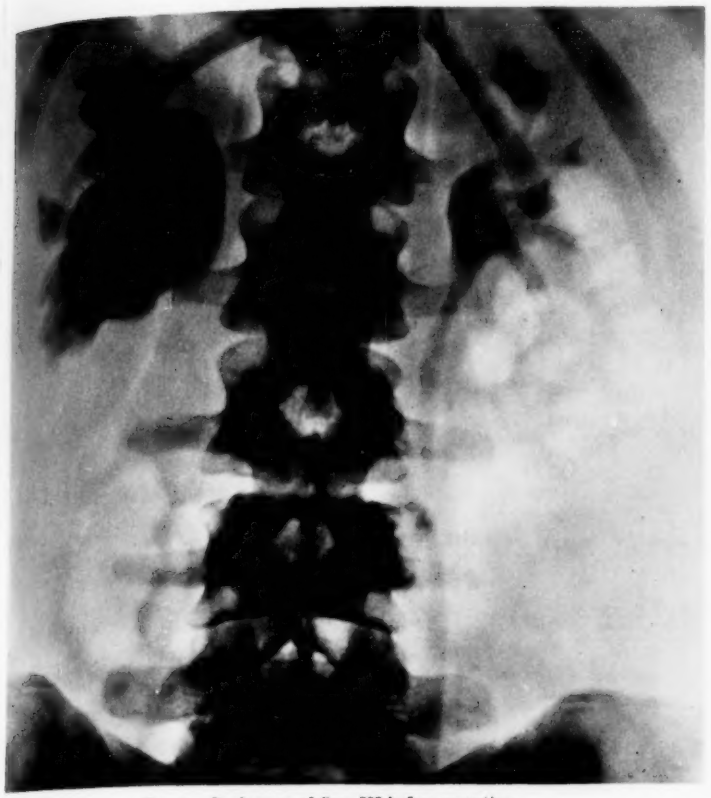


FIG. 1.—Pyelogram of Case III before operation.

FIG. 2.—Pyelogram of Case III some weeks after operation.

S. L. HIGGS: FRACTURES OF THE INTERNAL EPICONDYLE OF THE HUMERUS

Fracture of internal epicondyle with inclusion in elbow-joint. The radiographs show absence of normal prominence of internal epicondyle; presence of fragment inside the joint; some cubitus valgus, and slight outward displacement of radius and ulna. The patient had typical delayed ulnar neuritis.

FIG. 1.—Case I. Before treatment, showing complete collapse of left lung.

FIG. 2.—Case I. Bronchial stenosis outlined by lipiodol.

FIG. 3.—Case I. Three months later, showing almost complete re-expansion of left lung.

FIG. 4.—Case II. Outline of solid tumour before treatment.

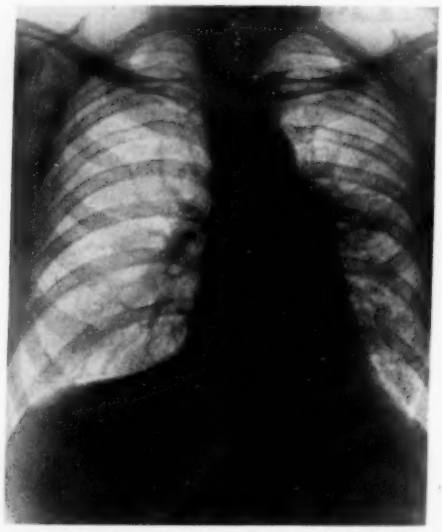


FIG. 5.—Case II. Appearance eleven months later, showing fibrosis of lung in treated zone.

FIG. 6.—Case III. Condition before treatment.

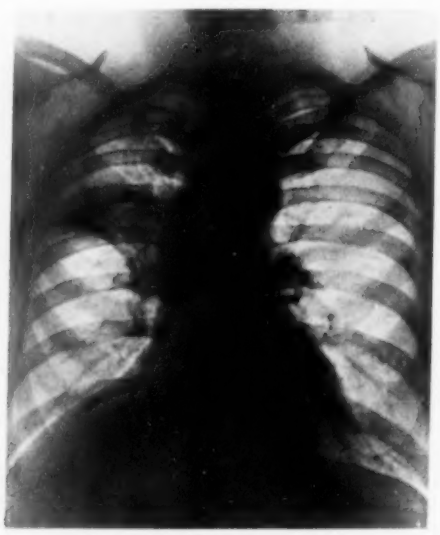


FIG. 7.—Case III. Six weeks later.

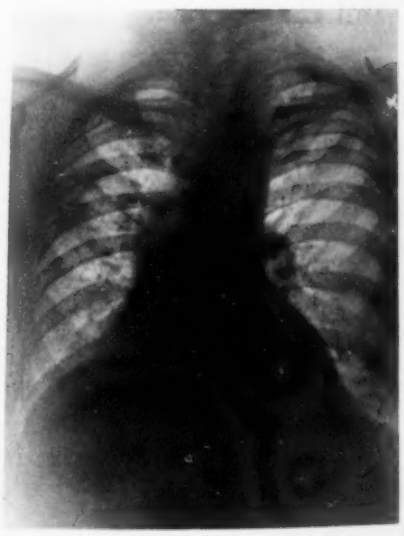


FIG. 8.—Case III. Six months later.

Authority involves the creation of a series of huge dams in the Tennessee River with 2,500 miles of shore line. Malaria is indigenous in this part, about 27 per cent. (on the average) of persons living within a mile of parts of the river being infected. There is anxiety as to whether the weed-grown, shallow margins of the new lakes will cause an increase of mosquitos, as has occurred in similar works elsewhere. Extensive and repeated spleen and blood surveys of samples of the population are being made, the level of the dams is being regularly raised and lowered by a few inches in order to hinder the growth of aquatic vegetation, the margins of the dams are being constantly sprayed with paraffin, paris green is being dusted on them from aeroplanes, and experiments are being carried out with trees which can survive with their roots under water and so by their shade destroy the other aquatic vegetation and allow free play to the minnows which are the natural enemies of the larvae. Last year the anti-malaria work of the Tennessee Valley Authority cost about £5,000.

In the same category is the American apprehension of the establishment of yellow fever in their country. At present they are free of this disease, but large and attractive resorts like Miami are within two days' air journey of the yellow fever belt in South America. The vector, *Aedes aegypti*, is present and, indeed, gives rise to cases of dengue every year over an extensive area in the south. Mindful of the devastating epidemic of yellow fever in New Orleans in 1878, the U.S. Public Health Service exercises stringent supervision over aeroplanes, searching them for mosquitos by vacuum apparatus and otherwise, and enforcing fumigation on the slightest evidence of infestation. All visitors by 'plane from the yellow fever belt are medically examined with great care.

Plague is also a constant cause of concern. The ground squirrels of California are extensively infected, and human cases occur from time to time. Extension to rats in populous areas would obviously be a serious matter. An endeavour has therefore been made, at great expense, to create a rat-free zone extending for ten miles round San Francisco, and a still larger scheme of rodent destruction in California is contemplated.

Control of Infection

The history and behaviour of the common infectious diseases is similar to our own, but there are a few minor differences in methods of control. The enteric fevers and other alimentary infections have reacted to the increased safeguarding of water supplies, but the Americans pay less regard to aesthetics than to essentials in this respect than we do. There is, for instance, less insistence on the purity of the original source of water and upon the more natural methods of purification involved in prolonged storage and slow filtration. At Cincinnati water is pumped from the heavily polluted Ohio River, settled in reservoirs for three days, precipitated in contact with lime and ferrous sulphate for eight hours, put through rapid filters, chlorinated, and delivered from a service reservoir to the mains. At Chicago the water is taken from shafts sunk far out in Lake Michigan, into which the sewage of this drainage area of 4,000,000 inhabitants used to pour along the channels of the Chicago and Calumet Rivers. In 1900 a drainage canal was opened, carrying the reversed flow of these rivers to the upper drainage basin of the Mississippi and so ultimately to the Gulf of Mexico, a thousand miles to the south. Chlorination was begun in 1912. The water is now simply pumped from the lake, chlorinated, and so delivered to the consumer. Although it may be slightly turbid and smell and taste of chlorine, until recently it has appeared to be quite safe as regards infection. Since the outbreak of amoebic dysentery of 1933 investigations into the destruction of *Entamoeba histolytica* have been made which appear to be driving the city to the conclusion that filtration will be the only safeguard against a possible recurrence of this disease, since the cysts are not easily destroyed by chlorine.

Hospital isolation is not adopted to nearly such a great extent as in Great Britain for the diseases conveyed by droplet infection. This cannot be attributed to better housing conditions, but may be partly due to the greater mental receptivity of the people and the more powerful influence of public opinion upon those who might otherwise omit to observe measures of home isolation. The reason, however, is more probably to be found in an earlier appreciation in America of the limitations of isolation in preventing the spread of these diseases, a reluctance to spend money on non-essentials, and a different tradition as to communally provided institutional treatment. Cases of scarlet fever are not removed to hospital on the extensive scale that keeps our hospitals filled. For diphtheria the value of hospital treatment is recognized, but even of this disease admissions do not appear ever to have reached the high percentage of cases which is common here.

Thus we find in New York only 900 fever beds for a population of seven millions, in Chicago 450 beds for 3,400,000, and in Baltimore 100 beds for rather more than 800,000. New Haven, with a population of over 160,000, retains forty beds in an isolation pavilion of the New Haven hospital for general diseases. These represent ratios per 100,000 of the population varying from 13 to 25, as against the 100 at which our large towns have aimed. There is no evidence that infectious diseases are any more prevalent or fatal for this reason.

Placarding of houses and sick rooms is common, and does not appear to cause public offence. It may help toward better home isolation. Terminal disinfection has practically fallen into disuse.

Immunization

The great effort which most large American health departments have made to promote immunization against diphtheria is no longer an item of news. In spite of the early disappointment in New York, careful scientific workers are now satisfied that the rapid decline of diphtheria in so many areas is not accidental but is a result of this effort. The conditions of success have been stated by Godfrey, and the recent records of New York State present convincing evidence that the mortality from diphtheria varies in close correspondence with the proportion of immunized children, especially those under school age. Similar observations have been made in Massachusetts. In some areas, however—for instance, Chicago—a rather disappointing percentage of immunized children have been found to have relapsed to Schick-positive some years after immunization, and the present impression is that the interval between dosage should be longer than has been customary, extending to about three weeks. Most of these children had been immunized at the age of 9 months to 1 year with toxoid-antitoxin mixture, and it may be that the late results of formol-toxoid or alum-precipitated toxoid administered a little later in life will be better. In any case, this apparent waning of Schick immunity has so far been associated with only a very slight recrudescence of the disease.

Dr. Ludvig Hektoen of Chicago, editor of the *Journal of Infectious Diseases* since 1904 and of the *Archives of Pathology* since 1926, and author of numerous articles on pathology and bacteriology, has been appointed chairman of the United States National Research Council in succession to Dr. Frank R. Lillie.

SUGGESTION FOR A MOBILE NATIONAL FEVER HOSPITAL

BY

A. B. ROOKE, F.R.C.S.

Any severe epidemic of infectious disease necessarily overtaxes the hospital accommodation and nursing resources of the district in which it occurs. This inevitably leads to delay in the proper isolation of cases and to further spread of the disease by contacts, while the shortage of nurses increases the difficulty of giving the patients adequate attention. Further, many of the doctors who are suddenly confronted with cases may have had little or no practical experience of the particular condition they are called upon to diagnose and to treat. The three main problems affecting isolation and treatment are: (1) the provision of accommodation; (2) the provision of nurses; and (3) the provision of doctors who have special knowledge of the particular disease.

Accommodation

The position with regard to accommodation may be stated thus.

1. Existing institutions meet the needs of the earlier cases.
2. Existing buildings, such as factories, hotels, or large houses, may be taken over and equipped as temporary hospitals.
3. Temporary buildings may be obtained and erected.
4. Isolation and treatment may be carried out in the patients' homes.

Nurses

To provide sufficient additional nurses, after the supply of local ones is exhausted, necessitates importing them from an ever-increasing distance, and the delay entailed, together with the difficulty of finding enough suitable nurses, may prove a very serious factor in both treatment and isolation.

Supply of Doctors with Special Knowledge

It would be interesting to ascertain what proportion of doctors concerned in the recent typhoid epidemic in Bournemouth, particularly those qualified since the war, had had the opportunity of treating throughout its entire course a case of typhoid or paratyphoid fever. Enteric cases are no longer nursed in the wards of a general hospital, and any sporadic ones that may have occurred in these doctors' practices have, very properly, been early removed to the nearest sanitary hospital under the care of its medical officer. It would be very useful to those engaged in caring for enteric fever patients, and it might save many lives, if someone possessing considerable experience of the clinical rather than of the administrative aspect of the disease were immediately available to advise on such points as inoculation, early recognition of complications, etc.

General Considerations

The outbreak of an epidemic of this kind in any large town, particularly if it happens to be a port or a health resort, must obviously lead to the spread of the disease to many distant centres. The problem is therefore of national rather than of purely local importance, and if the spread of the disease is to be kept within reasonable limits it is essential not only that the source of infection should be traced and eliminated, but that cases should be recognized at the earliest possible moment and the isolation of suspects as well as of definite cases enforced. A corollary of this is that first-rate accommodation should be early available, and that the medical treatment and nursing should be above reproach.

There are obvious difficulties in the way of providing this Utopian state of affairs. If every big town is to be supplied with a very large up-to-date fever hospital, which, in the ordinary way, will be occupied by a very small number of cases, the cost of construction and upkeep will be enormous. Such institutions must also tend to become inefficient, since anyone who has been in an almost empty hospital cannot fail to realize the depressing and demoralizing effect of attending to a few patients scattered throughout a vast edifice. A further difficulty would be the impossibility of retaining the services of a sufficient number of nurses save by a liaison between institutions in other districts.

It would appear, therefore, that some scheme is urgently needed that will fulfil the following requirements: (1) low cost; (2) efficiency; (3) elasticity; and (4) immediate availability. It is obvious that the erection of numerous large and costly buildings must be avoided, and this difficulty could perhaps be overcome if the Ministry of Health were to provide a number of mobile hut units. The local authority would be responsible for the provision of a suitable site and for the erection of the huts within the grounds of the fever hospital.

The following brief outline of a scheme of this kind is the suggestion of one unversed in the technicalities of public health administration, and can no doubt be improved.

Duties of the Local Health Authority

1. Each large town should have a fever hospital with accommodation amply sufficient for its ordinary needs.
2. The sterilizing apparatus, kitchen accommodation, and sanitary fittings and equipment should be so disproportionately large as to enable five or six times the number of beds they ordinarily serve to be dealt with in an emergency.
3. The site of the hospital should be outside the town, and should be large enough to accommodate the hut units when required. Facilities should be available for connecting the units to the main drainage and water supply.
4. The local authority should be responsible for the cost of transporting the temporary buildings and for connecting them with the drains, hot-water supply, etc.

Duties of the Central Health Authority

1. Well-fitted portable huts, complete with equipment, should be designed, and corresponding portable accommodation for nurses provided. Each hut should contain, say, twenty-five beds, with a companion hut for fifteen nurses, and they should be available in sufficient numbers to take up to 1,000 patients, with corresponding accommodation for 600 nurses. The central authority should keep these units ready for immediate dispatch, so that in the event of an epidemic they could be erected wherever they might be required within twenty-four hours. Two hut units might be sent in the first instance, the remainder to follow as necessity arose.
2. Nurses should be provided by having, on immediate call, say, thirty employed in general, fever, and municipal hospitals. When these had been called up, their places in the institutions from which they had been taken could be filled from a reserve of nurses enrolled for this purpose. Thirty more nurses could then be placed on first call, and similar arrangements made to fill their places if they were needed.

This portable hospital, available for use all over the country, would be far more useful than a stationary hospital serving a strictly limited area. When out of date it could be scrapped and replaced at far less cost.

A post-graduate course in surgical technique relating to the organs concerned in movement will be held in the University of Paris from October 12th to 28th under the direction of Professors Ombredanne and Mathieu, and will include practical demonstrations as well as lectures. Among the subjects to be dealt with are paralysis of the shoulder due to obstetrical causes and diseases of childhood, fractures and pseudarthroses of the neck of the femur, scoliosis and Pott's disease, articular ankyloses, tuberculosis of the tarsus and metatarsus, chronic arthritis of the hip, and affections of the lumbo-sacral region. The fee is 250 francs, and inquiries should be addressed to the secretary of the faculty of medicine of the University.

British Medical Journal

SATURDAY, OCTOBER 3rd, 1936

NUTRITION AND HEALTH AT THE LEAGUE ASSEMBLY

The League Assembly is meeting at Geneva in an atmosphere of embarrassment and frustration. The plenary sessions and the commissions alike suffer from a curious lack of animation, and the delegates and the supporting public seem weary and indifferent. One circle of real interest, however, is to be found in the work on nutrition, which may ultimately be hailed as a principal success of the League of Nations long after its political failures have passed into oblivion. The keen interest in this subject which found expression in the discussions of the 1935 Assembly is again in evidence at the present session, as though men were turning in relief from politics to economics and science. The subject of nutrition was introduced by the rapporteur M. Queuille, a French delegate. He described the setting up of the Mixed Commission, consisting of agricultural, economic, and health experts, which has already held two sessions this year. Lord Astor's chairmanship of this body was described by the rapporteur as a very fortunate choice. He said that at the present stage of its work the commission had endeavoured to place the chief emphasis on the influence of adequate nutrition on public health and had been content merely to outline the economic and agricultural aspects. That, after all, was the natural starting-point, a question which had become in one form or another a concern of every State. The ultimate object of the work undertaken in this field was—by proper governmental initiative or action within the limits set by political, social, and economic conditions, and so far as the available resources permitted—to indicate the dietary habits that science recommended men to acquire in order to raise the general standards of physical health.

"In the present phase of their researches," M. Queuille said, "scientists have laid down certain principles and rules; they have shown the havoc wrought both on individuals and on the community by certain dietary errors. It is the duty of the State to further the progress of such scientific investigations, and to bring its economic and social policy into line with their results for the greater good of the people." What was particularly desired was a nutritional policy in every modern State. Some ten countries had now set up national nutrition councils or committees. These bodies had, of course, a national purpose, but if set up in a large enough number of countries they would make a useful contribution to national co-operation. Later on their activities may be co-ordinated on the international plane. The rapporteur set out the fifteen recommendations of the Mixed Commission. The first called for scientific study of nutrition problems with a view to ascertaining the optimum nutrition for each country. The second called for appropriate measures to ensure that the latest information about nutrition was included in the teaching of medical students and practitioners, district nurses, and others. The third was concerned with a vigorous policy of popular instruction. He also drew attention to important resolutions adopted by international bodies on this subject. The last conference of the International Labour Office declared that workers' nutrition must be regarded as among the most important problems which the International Labour Office had to solve, and the recent general assembly of the International Agricultural Commission had testified to the interest taken by agricultural circles in the problem of nutrition. The campaign for improved nutrition launched by the 1935 Assembly had aroused an interest which must be maintained and extended to wider circles. In the debate which followed, the Indian delegate, Sir Krishnama Chari, Dewan of Baroda, testified to India's keen concern in the nutrition problem. Institutes, he said, had been set up in places where the problem could advantageously be studied, and steps had been taken to form an advisory committee to follow up investigations and make a survey of popular nutrition throughout the Indian Empire. A woman Soviet delegate, Mme Kollontai, Soviet Minister at Stockholm, spoke of progress in the improvement of nutrition in the Union of Soviet Socialist Republics. In particular collective kitchens had been established, mainly the work of women. Improved hygienic conditions in factories and industrial undertakings, school hygiene, encouragement of athletic associations, and attention to rural housing, are all part of the Russian programme. Delegates from Uruguay and other countries also reported on national efforts to improve nutrition.

The Health Organization of the League received the usual compliments; delegates from five continents united in its praise. A forthcoming event of some interest sponsored by the Organization is a conference on rural hygiene to be held next year in Java and to take cognizance of housing conditions in the Far East. The assistance of the Government of the Dutch East Indies was promised by the delegate for the Netherlands. The Chinese delegate also promised the co-operation of his Government, and the French Government agreed to send a delegation including public health representatives. The question of the improvement of rural housing is being taken very seriously in Sweden and in France; the International Exhibition in Paris next year will include a section devoted to this subject. The Australian delegate spoke appreciatively of the second International Pacific Health Conference, which was held at Sydney last year, when interesting discussions had taken place on the problems of the Austral Pacific, especially the training of natives to be medical assistants. Several delegates, notably those

from Australia, Poland, and Denmark, testified to the value of the work inspired by the League in endeavouring to diminish maternal mortality and morbidity. Dr. Christiani of Denmark spoke of a committee set up in that country to combat the decrease in the birth rate by showing how the risks of maternity could be diminished. Schools of domestic training had been opened, with the support of the medical and nursing professions.

It is encouraging, when so much of the activity of the League is paralysed or moving timidly within a narrow radius, to find one branch of its work which receives general commendation and is capable of being effectively stimulated.

THE STOMACH IN SKIN DISEASE

The traditional association of many forms of skin disease with disorders of the digestive system, and more especially with gastric complaints, has lately been made the subject of critical examination with the help of the gastroscope. Clinicians are now beginning to reap the benefits resulting from the tireless efforts and ingenuity of the optical engineers who have, after many years' labour, succeeded in making gastroscopy a practicable method of clinical examination. Pioneers in this important field are MM. Paul Chevallier and F. Moutier.[1 2 3] They have already shown that in certain dermatoses known to affect the mucous membranes either of the buccal cavity or of other orifices gastric lesions, which might *a priori* be expected to be present, can actually be demonstrated, notably in lichen planus. Some patients suffering from this disease complain of vague gastric symptoms. In two cases P. Chevallier has observed on the gastric mucous membrane whitish patches of network, such as are familiar to us on the inner surfaces of the cheeks and on the dorsum of the tongue. Gastric lesions have also been detected in mycosis fungoides. On the other hand, that common but mysterious disease psoriasis seems to be unaccompanied by any gastric phenomenon. Another discovery, by no means surprising, was the existence of an aphthoid gastritis corresponding with the " thrush " in the buccal cavity of many dyspeptics. Characteristic lesions found in two patients suffering from thrush in the mouth consisted of erosion of the gastric mucous membrane of more or less circular shape, with a narrow purpuric margin and with a white or greenish coating in the centre. In cases of cutaneous purpura also associated with gastric symptoms and haematemesis gastroscopy disclosed purpuric lesions and ecchymosis affecting the gastric mucous membrane, without the presence of any ulcer or erosion. A striking case reported is that of a woman suffering from a scaly dermatitis (*dermatose ichtyosiforme*) of many years' standing. Gastroscopy showed an oedema of the pyloric antrum which obscured the sight of the pylorus itself, and swelling and congestion of the whole of the mucous membrane of the fundus. This patient was completely cured by injections of an antigen derived from a test meal composed of milk and eggs, articles of diet which always caused in her case both migraine and dyspepsia. Both the gastric and the cutaneous manifestations of her complaint vanished. Positive results have also been obtained from gastroscopic examinations in many cases of urticaria. It was found that several patients suffering from this baffling disease were also the subjects of an atrophic gastritis. When fully developed this is characterized by a smooth aspect of the mucous membrane and by disappearance of the typical folds into which it is normally thrown. This stage is preceded by the appearance of a papular (*mamelonnée*) gastritis accompanied by a fine vascular network. When these conditions are present, as a rule there is also achlorhydria.

The authors claim to have established the existence of a definite gastric urticaria ; the patients, however, seldom complained of any digestive disturbance. Examination of the blood in these individuals showed only the slightest abnormalities: such as there were suggested merely a mild degree of chlorosis. Nevertheless Chevallier and Moutier claim the most striking therapeutic results in such patients from the administration of iron in doses far greater than those which are effective in ordinary chlorotic anaemia. The initial dose is 3 grams daily, to be increased afterwards to 6 grams or more. It is given as either reduced iron, the protoxalate, or the carbonate, in cachets of 1 gram. In order that it may be tolerated, the authors advocate that the iron should be given in the middle of a meal. As not more than 1 gram may be taken at one meal, six or more meals a day would have to be consumed if the treatment were carried out as indicated. A gourmand might consent to this, but not a gourmet, and there does not seem any obvious reason why the doses of iron recommended should not be taken with the usual three meals a day. It is claimed that the effect in suitable cases is extremely rapid, a definite improvement occurring within a few days. The treatment must continue for a long time if relapses are to be avoided. Should the existence of this special variety of urticaria and the efficacy of the treatment by means of iron be confirmed by other workers an important advance towards the solution of the problems connected with that distressing complaint will have been made.

The connexion between eczema and disorders of the alimentary canal has engaged the attention of dermatologists and other physicians for many years, although recently the role of gastric and intestinal disturbances in its causation has tended to be minimized, while greater stress has been laid upon external irritants. Chevallier and Moutier have now examined the old problem with the help of the gastroscope. Those who hoped that their efforts would demonstrate a close connexion between the stomach and eczema will be disappointed with their results. On one occasion only did they observe a vesicular eruption on the surface

[1] *Journ. de Méd. de Lyon*, May, 1936, p. 369.
[2] *Ann. de Derm. et de Syph.*, April, 1936, p. 337.
[3] *Nutrition*, 1936, vi, No. 1, p. 19.

of the fundus of that organ. In six other cases they detected some form of mild gastritis, but in most cases examined by the gastroscope the appearance of the gastric mucous membrane was normal. The stomach is sometimes dilated and excess of mucous secretion is not uncommon—a condition frequently associated with other complaints. In many of the patients whose gastric mucous membrane appeared to be normal a functional achlorhydria was present. The authors are inclined to ascribe this to abnormalities in the metabolism of water and chlorides which are well known to occur in eczematous subjects. But the tendency of their investigations is to confirm the view gradually gaining ground that the importance of digestive and dietetic factors in the causation of eczema has been overrated.

FIVE YEARS OF THE MENTAL TREATMENT ACT

The love for euphemisms, characteristic of a genteel age, can be carried too far. No one regrets the disappearance of the "pauper" and the "lunatic," the one becoming a "rate-aided person," and the other, unless he be a criminal lunatic, a "person of unsound mind." We no longer speak of the "workhouse" or the "asylum," but of the "public assistance institution" and the "mental hospital." The new terms are descriptive, even more so than the old. But the Board of Control in its annual report (summarized on page 686) mentions that it has received more than one application for concurrence in proposals that the term "mental hospital" be now modified by the omission of the word "mental." The Board rightly refuses to countenance such proposals. The term "asylum" may have carried some stigma, but "mental hospital" carries none, or at least there is no evidence that the name acts as a deterrent to voluntary patients, which is, after all, the principal consideration. The numbers of such patients steadily increase, to refute the prophecy often made by critics that no one would enter such hospitals unless compelled. The Mental Treatment Act, which enabled voluntary patients to be received in a public mental hospital, and made it possible for the first time for rate-aided patients to be treated on a voluntary basis, is only five years old, yet last year one person out of every four—5,834 out of 22,908—who entered a mental hospital in England and Wales did so voluntarily. We leave out of account in these figures the relatively few (1,258) "temporary" patients admitted under Section 5 of the Act without certification, who were *ex hypothesi* incapable of choice. The proportion of voluntary to total admissions varies within very wide limits in different parts of the country; in some hospitals it is over 45 per cent., in others under 5 per cent., but the Board of Control thinks it a reasonable expectation that in time at least one-half the total admissions will be voluntary. It is also believed that the "temporary" admissions may reach a maximum of 15 per cent. (they stand at only 5 per cent. at present), and this means that ultimately the proportion of admissions under certificate will be only one-third of the total. When not more than one-third of the patients in mental hospitals are under certificate the prejudice against either the institution or its name can hardly survive. Already there are areas where the voluntary and temporary admissions taken together exceed the admissions under certificate, and in some areas voluntary admissions have had to be restricted owing to shortage of beds. Another sign of the new outlook in mental illness is the continued growth of out-patient centres, which now number 160. The Board states, however, that there are still some areas not served, and others where the intervals between sessions are far too long. It is fully realized that these out-patient centres make a heavy demand on the medical staff of the mental hospitals—it is the normal practice of local authorities to associate the medical officers of mental hospitals with this work—particularly in counties where much travelling is necessary, and the Board hopes that visiting committees will bear in mind the crucial importance of out-patient work in considering requests for additional medical staff. The centres cost very little to maintain, and from a financial point of view they are, says the Board, "the best investment a visiting committee can make." With the increase of such centres the need for skilled social workers to act as links between the medical service and the homes of the patients becomes increasingly evident. Only sixty-two such workers, of whom forty-three are whole-time, are at present employed. One note of disappointment sounded in the report refers to the failure of the great voluntary hospitals (with a few notable exceptions, of which Westminster Hospital is one) to provide for the treatment of early mental cases under the Act. On the other hand, the beginning of a movement among local authorities to make provision for early mental treatment in public health general hospitals is noted. A significant step has already been made in this direction in connexion with the St. Helier Hospital which is being erected by the Surrey County Council. It must not be forgotten that over 15,000 certified patients are maintained in public health general hospitals and public assistance institutions. Finally, it is reported that the Mental Treatment Rules—a complex code of 133 rules, which will be found appended to the Act—have worked during the five years with a minimum of difficulty.

MATERNAL AGE AND CONGENITAL MALFORMATIONS

Whether there may be controllable factors in the prevention of congenital malformations is obviously an important point for the eugenists. It has already been shown that the first four children in a family are less likely to exhibit congenital deformities than subsequent offspring. Since parents are older when their later children are born this observation raises the question whether the age of the mother plays any part in the production of defective children. Dr. D. P. Murphy has therefore continued his observations in an attempt to deal with this aspect of the matter[1]: 570 families formed the basis for investigation. Each family possessed at least one congenitally malformed child who had died and for whom a death certificate had been signed. The home of each family was visited and information was secured from the mother or a member of her immediate family concerning the year of her birth and that of each of her children. In this way information regarding the ages of the mothers at the

[1] *Amer. Journ. Dis. Child.*, May, 1936, li, 1007.

births of 607 congenitally malformed children and 1,583 normal siblings was secured. It was found that of the mothers who had at least one normal and one defective child the average age at marriage was 21 years, at the birth of the normal child 23, and at the birth of the first defective child 28½. Two groups of forty-five mothers each were studied with respect to the intervals before the birth of the first defective and the first normal child. The average age at marriage of one group was separated from that of the other by an interval of ten years. The interval before the birth of the first defective child was longer in the younger than in the older group. Dealing with the mother in more detail it is concluded that the proportion of defective to normal offspring at different maternal ages was as follows: "(*a*) lowest when the mothers were between 20 and 25 years of age; (*b*) more or less constant when the mothers were between 15 and 30 years of age; (*c*) increasing from year to year when the mother had passed 30; (*d*) greatest after the mothers had passed 40 years of age, at which time the ratio of defective to normally developed children was approximately three or more times that noted before the mothers were 30 years old." From this study and from previous work it is concluded that congenital malformation is most likely to afflict the child if it is fifth or later in the order of birth in the family or if its birth occurs after the mother is 30 years of age and especially if she is over 40.

ACUTE PULMONARY OEDEMA

Acute pulmonary oedema occurring in heart disease of hypertensive or syphilitic origin, with coronary sclerosis, or with mitral stenosis, is usually held to be mechanical in origin and due to sudden left ventricular failure, followed by increased pressure in the pulmonary circuit. The dramatic relief which usually follows the administration of morphine and the partial failure of experiments made to produce acute pulmonary oedema by purely mechanical means have led to the belief that the nervous system plays an important part in the attack. Recently it has been claimed[1] that by complete ligature of the ascending aorta in young animals pulmonary oedema can be produced with an open thorax under a variety of anaesthetics and even after extirpation of both stellate ganglia. In some cases acute pulmonary oedema failed to occur, but in each of these there was an error in technique—either the aorta was incompletely ligatured or the pulmonary artery had been included. Similar attacks were induced by the injection into the wall of the left ventricle of a solution of silver nitrate or of alcohol. Injection of silver nitrate into the superficial part of the wall of the right ventricle was not followed by pulmonary oedema, but a deep injection led rapidly to generalized oedema of the lungs: the fluid differed, however, from that resulting from aortic ligature in being white and frothy and not haemorrhagic. Similar phenomena are observed after the injection of silver nitrate into the right ventricular cavity or into the saphenous vein. Alcohol injected into the right ventricle or pulmonary artery failed to give rise to oedema. These experiments confirm the generally accepted view that acute pulmonary oedema, as it complicates heart disease, is a mechanical result of an acute left ventricular failure. They also show that acute and serious damage to the muscle of the right ventricle does not cause pulmonary oedema: the oedema resulting from injection of silver nitrate into a systemic vein or the cavity of the right ventricle is probably due to an intense toxic action on the lung tissue, and is quite different in pathogenesis from that which accompanies aortic ligature or injury to the left ventricle.

[1] Coelho, E., and Ribeiro, M.: *Arch. Mal. du Cœur*, June, 1936, p. 383.

"BEJEL": NON-VENEREAL SYPHILIS

During the past eight years there have appeared from the pen of Dr. E. H. Hudson of the American Mission Clinic, Deir-ez-Zor, a series of articles on the manifestations of syphilis among the inhabitants of the Middle Euphrates River region. The chief interest of his observations lies in the fact that he has been able to study, side by side, a purely venereal type of the disease called "franghi," in Arab and Christian town-dwellers, and a purely non-venereal type known as "bejel," in the semi-nomad Bedouin. Among the town-dwellers "franghi" or venereal syphilis, comparable to syphilis elsewhere, occurs to the extent of 10 per cent. among Christians and 25 per cent. among Arabs, and gonorrhoea is common. Among the Bedouin, who number about 150,000 and live in close-knit, geographically and socially isolated communities, "bejel" occurs in 75 per cent. or more, but gonorrhoea is never seen. Their tribal organization is rigid, and among them sexual promiscuity is unknown. "Bejel" is non-venereal and acquired in childhood. It is a disease of the whole community, and in its epidemiology resembles to some extent that of a childhood exanthem; it is looked upon as inevitable and self-limiting. In his last two papers[1,2] Dr. Hudson has epitomized his evidence for believing that "bejel" is in fact non-venereal syphilis and gives results of the serological tests carried out. He has marshalled the facts in masterly fashion, and his conclusions would appear to be indisputable. The infection in "bejel" is contracted by the Bedouin child from some other child in the acute stage of the disease, probably by means of drinking-vessels. The earliest lesions are usually about the mouth and oral mucous membrane in the form of greyish patches with desquamation but no ulceration. These are followed by papular eruptions about the genitals and other warm and moist surfaces, and then elsewhere on the skin in circinate formations, without much constitutional disturbance. The nasal bones may be attacked, and less often the epiphyses and periosteum of the long bones. In the course of a year or so the lesions vanish and the child again appears as a healthy individual. No further signs may ever occur, but in many instances, at some later date, in the second, third, fourth, or even up to the seventh decade of life, ulceration of the pharynx and skin or gummata of bone may develop, bone-pain often being a prominent symptom. There is never any serious damage to the cardio-vascular or nervous systems or of the viscera, and the miscarriage rate is not raised. It was found that the standard Kahn test is more sensitive than the Kolmer-Wassermann reaction in detecting latent syphilis, and that the presumptive Kahn test is 15 per cent. more sensitive than the

[1] *Arch. Derm. and Syph.*, June, 1936, xxxiii, 994.
[2] *Arch. of Path.*, June, 1936, xxi, 727.

standard Kahn test. Dr. Hudson's observations form together one of the most valuable contributions to our knowledge of syphilis in recent years. There is, however, much yet to be done, and this unrivalled opportunity of studying non-venereal child syphilis, as Dr. Hudson points out, may soon be lost, since the disintegration of these communities will probably not long be delayed. The conditions also offer a chance, which has long been sought by those interested in tropical medicine, of a comparative study of non-venereal child-acquired syphilis and yaws. Dr. Hudson's work has for the time being come to an end, but it is to be hoped that means will be found of continuing the investigations; much light might thereby be thrown upon the relationship of yaws and syphilis.

THE WELLCOME BEQUESTS

Sir Henry Wellcome, LL.D., F.R.S., who died on July 25th, aged 82, left estate of the gross value of £2,138,959, with net personalty £2,065,063, on which estate duty of £968,754 has been paid. The provisions of his will include the appointment of trustees, who are directed to apply the residuary income from Burroughs Wellcome and Co. and its affiliated companies in support of research. Among various bequests he left £500 to Dr. Barnardo's Homes, and all his personal effects and collections (not otherwise bequeathed) to his trustees for the furnishing and equipment of the museums, libraries, research bureaux, and laboratories in England or elsewhere connected with the organizations of the Wellcome Foundation, of which he was governing director. The trustees are also directed to pay within twenty-five years to special trustees sums amounting in all to $400,000 for the completion and endowment of the memorial to his parents at Garden City, Minnesota, to be known as the Wellcome Memorial. The residue of Sir Henry Wellcome's estate is to be devoted at the discretion of his trustees to two purposes: (1) the Research Undertaking Charity, a fund for the advancement of research work bearing upon medicine, surgery, chemistry, physiology, bacteriology, therapeutics, materia medica, pharmacy, and kindred subjects which may conduce to the improvement of the physical condition of mankind; and (2) the Museum and Library Charity, for maintaining and extending any of his research museums or libraries now in existence or to be set up.

PRIZE FOR CANCER RESEARCH

Professor E. L. Kennaway, M.D., F.R.S., and Professor J. W. Cook, D.Sc., have jointly been awarded the prize of the Belgian Union Minière du Haut Katanga for their scientific work in connexion with cancer, and the presentation was made during the second International Congress on Cancer held last week in Brussels. Professor Kennaway holds the chair of experimental pathology in the University of London at the Royal Cancer Hospital, of whose research institute he has been director since the death of Dr. Archibald Leitch in 1931. Professor Cook holds the university chair of chemistry at the Royal Cancer Hospital, to which he is attached as research chemist. The prize consists of 50,000 Belgian francs and fifty milligrams of radium. It was presented to Professors Kennaway and Cook by Dr. Jacques Bandaline, director of the International Cancer Union, whose adjudicating committee had made the award. A telegram of congratulation from the Earl of Granard, president of the Royal Cancer Hospital, was read at the ceremony by Mr. Cecil Rowntree, senior surgeon to the hospital and a representative of Great Britain on the International Cancer Union.

ADDENDUM TO THE B.P.

The Pharmacopoeia Commission, soon after it took office in 1933, announced that it proposed to publish an Addendum to the *British Pharmacopoeia* in 1936.[1] We have now received from the Registrar of the General Medical Council a circular stating that the Addendum will be published on December 29th next, and that in order to meet the convenience of pharmacists, manufacturers, and other persons or bodies concerned with the alterations and amendments, advance copies are now available for inspection at the office of the Council at 44, Hallam Street, London, W.1, and at the offices of the Scottish and Irish Branch Councils at 44, Queen Street, Edinburgh, and 35, Dawson Street, Dublin, from 10 a.m. to 1 p.m. and 2 p.m. to 4 p.m. each weekday except Saturday. The conditions governing the facilities for inspection are: (1) No matter contained in or derived from the *Pharmacopoeia*, as altered and amended by the Addendum, may be published in book form before December 29th, 1936. (2) Substantial extracts from the *Pharmacopoeia* as so altered and amended may not be published at any time or in any form without the express permission of the Council, given in writing before publication of the matter in question. (3) Matter contained in or derived from the *Pharmacopoeia* as so altered and amended may not be published at any time or in any form to an extent or in a manner which is, in the opinion of the Council, calculated to render direct reference to the *British Pharmacopoeia*, 1932, or the Addendum, 1936, unnecessary. Those who desire to consult the advance copies of the Addendum, whether in an individual or a representative capacity, will be required to sign a form of acceptance of these conditions.

THE MEDICAL REGISTER: UNTRACEABLE PRACTITIONERS

We publish in the *Supplement* this week, at the request of the General Medical Council, a list of the names of those medical practitioners who have not replied to the Council's inquiries as to the accuracy of their postal addresses. Any practitioner, wherever resident, whose name is included in this list should communicate at once with the Registrar of the General Medical Council, 44, Hallam Street, Portland Place, London, W.1, or, if originally registered in Scotland, with the Registrar of the Scottish Branch Council, 44, Queen Street, Edinburgh 2.

The Harveian Oration before the Royal College of Physicians of London will be delivered on Monday, October 19th, at 5 o'clock, by Sir Walter Langdon-Brown, whose subject is "The Background to Harvey."

[1] *British Medical Journal*, 1934, i, 493.

LUNACY AND MENTAL DEFICIENCY

ANNUAL REPORT OF BOARD OF CONTROL[1]

Statistics can be alarming or reassuring according to the way in which they are presented. When the annual report of the Board of Control states that at the beginning of the present year there were in England and Wales 153,771 persons suffering from mental disorder notified as under care, and that the number of mental defectives reported was 116,434, a formidable problem is suggested. The figure in the one case corresponds to the total population of Birkenhead, and in the other to that of Bournemouth. But when it is put in another way, that one person in sixty-six families (counting four persons to the family) is of unsound mind, and one person in ninety families reported mentally deficient, the dimensions seem much more manageable.

The numbers in each category are rising year by year. During the last five years the average annual increase in the number of persons suffering from mental disorder and under care has been about 1,700. But this does not reflect a real increase in incidence. Mental disorder belongs, in the main, to adult life, the incidence reaching its maximum between the ages of 45 and 55, so that an increase at the present time must be considered in relation to the birth rate of at least a generation ago, when the population was growing much more rapidly than at present. During the last decade of the nineteenth century the population increased by three and a half millions, but the most recent intracensal period showed an increase only of two millions.

The number of mental defectives under care last year, again, increased by 4,000, but here, of course, the figure is governed by the stricter methods of ascertainment. It is the more enterprising areas which have the higher figures. The ratio of the mentally deficient per 1,000 of the population has risen from 1.46 ten years ago to 2.88, but it must not be concluded that mental deficiency is on the increase even if the figure goes much higher. The Wood Committee estimated the number of defectives for whom local authorities were, or might at any time become, responsible to be 4.52 per 1,000, and this was regarded by some experts as an underestimate and likely to be exceeded in many areas with better provision for ascertainment, institutional care, and training. Already in the areas of ten local authorities—namely, the counties of Cardigan, Devon, Rutland, Shropshire, Somerset, Suffolk, and Wiltshire, and the county boroughs of Walsall, Plymouth, and Nottingham—this estimated average has been exceeded, and year after year there is a rapid rise in areas where an active policy is pursued.

Categories of Mental Patients

Of persons of unsound mind who were under care on January 1st of this year 15,014 were private patients, 137,903 rate-aided, and 854 criminal. Males were in a slight majority among private patients, but only because in this category were included all service and ex-service men receiving treatment under Government arrangements. Taking all the patients suffering from mental disorder, females represent 55.7 per cent. On the other hand, among mental defectives under care they represent only 49 per cent. The voluntary patients numbered 5,731, the "temporary" patients (under Section 5 of the Mental Treatment Act) 539, and the certified 147,501. Mental hospitals provided by the local authorities accommodated (to use round figures) 128,000 of the patients, 2,500 were in registered hospitals, 2,800 in licensed houses, 15,000 in public assistance institutions and public health general hospitals, 316 (303 of them certified) in private single-care, and 3,900 in receipt of outdoor relief. The remainder were accounted for in hospitals and nursing homes approved under the Mental Treatment Act, naval and military hospitals, and Broadmoor, which had a population of 787, of whom 605 were males.

[1] Twenty-second Annual Report of the Board of Control for the year 1935. Part I. London: H.M. Stationery Office. 1936. (Pp. 85. 1s. 6d. net.)

During 1935 the number of persons admitted to institutions (disregarding those in public health general hospitals and public assistance institutions and in receipt of outdoor relief) was 29,862, those discharged or transferred to other care numbered 19,075, and 9,086 died. Of the persons admitted, one out of every four had previously been dealt with under the Acts. Of those discharged, 9,076 were reported as recovered, and 6,120 relieved. The deaths numbered 305 more than in the previous year. An analysis of the causes of death in 1935 was not available in time for the report, but in 1934 the principal cause of death was shown to be pneumonia in all forms, with diseases of the myocardium next in frequency, followed by general paralysis of the insane, arteriosclerosis, and old age. The proportion of post-mortem examinations to deaths varies widely in different parts of the country, from 90 per cent. and over in some hospitals to under 30 per cent. in others.

Only 134 cases of infectious disease (chiefly scarlet fever and diphtheria) were recorded among the patients in county and borough mental hospitals, and 45 cases among the staff. The cases of pulmonary tuberculosis numbered 965, the fresh cases numbering 791, the lowest figure yet recorded, representing a ratio of 6.3 per 1,000 resident. There were 93 cases of typhoid or paratyphoid fever, 487 of dysentery, 279 of erysipelas, and 905 of influenza.

"Temporary" Admissions

As it is five years since the Mental Treatment Act came into operation (the subject of an annotation at page 683), the report reviews at some length the lessons derived from the working of the Act, especially in connexion with the provision for temporary treatment without certification, the admission of voluntary patients into public mental hospitals, and, as an indirect result of the Act, the setting up of admission units for persons requiring early treatment. During the earlier years very little advantage was taken of Section 5 whereby non-volitional patients may be detained without the order of a magistrate, but in 1935 the number of such admissions reached 1,258, nearly double the previous year's figure. The proportion, however, is still little more than 5 per cent. of the total admissions. The Board agrees that Section 5, with its seventeen subsections, is complicated and difficult, and that some simplification is called for when opportunity arises. The "twenty-eight days' rule" in particular needs modifying; this is the rule whereby if a temporary patient becomes capable of expressing himself as willing or unwilling to continue to receive treatment he shall not thereafter be detained for more than twenty-eight days unless in the meantime he has again become incapable of so expressing himself.

Institution Management

Accommodation in recognized bed space is afforded in county and borough mental hospitals for 125,552 patients, and there were on the books of these hospitals last year over 2,000 patients in excess of that provision. Plans were approved by the Board during 1935 which were estimated to provide 2,444 additional beds. The boarding-out of suitable patients is being systematically attempted by the authorities of several mental hospitals. In London, with the co-operation of the Mental After-Care Association and the Central Association for Mental Welfare, extended leave under Section 55 of the Lunacy Act, 1890, has been accorded and home care provided, the county council in each case paying a maintenance allowance not exceeding the current charge in the mental hospital.

The Board believes that more might be done to make institution meals attractive and to improve the service. No English mental hospital so far has experimented with the cafeteria system adopted in the United States, whereby the patient is given a plate which he takes to a service counter where he is offered a choice of dishes. It is the opinion of some that the method would be wasteful, but the contrary is reported of the American experiment; the complaint is even made that so little waste is left that there is not enough to feed the pigs! Many visiting com-

mittees have responded to the Board's previous suggestions with regard to the clothing of women patients, that it should be modernized and assimilated to that ordinarily worn in the outside world, instead of being of a definitely institutional type. It is pointed out that there is no economy, but rather the reverse, in forcing women to wear garments so shapeless or antiquated in design that none would wear them except under compulsion. "Only the most demented or the most devout of women are indifferent to what they wear."

The Board regrets that observation wards in municipal hospitals and public assistance institutions are not what they should be. In many of them the newly admitted patient is required to mix with chronic patients and low-grade mental defectives. There are no facilities for classification, and the staff have not had the training necessary for the proper handling of mental cases. Sometimes the wards are so small that it has not been considered necessary to appoint staff trained in mental nursing. At the same time, it is added that the big observation ward is not without its dangers. There is a tendency to spend on its equipment money which could be better spent in improving the mental hospital, and every improvement of the observation wards increases the temptation to undertake active treatment, a practice quite inconsistent with the main purpose of such wards, which is the diagnosis of doubtful cases. "Once it is clear that the patient requires treatment for mental illness no time should be lost in transferring him to the mental hospital, which, in general, is the only place able to provide the specialized experience and the therapeutic resources necessary for successful treatment."

Mental Deficiency

The mentally defective patients under care at the beginning of the present year numbered 78,741. Rather more than half of these were in institutions or under guardianship and the remainder were under statutory supervision. The number of defectives who had been reported to the local authorities, whether subject to be dealt with or not, including persons between the ages of 14 and 16 for whom the local authority has no liability until they reach the latter age, was 116,434, or 2.88 per 1,000 of the population; and the number ascertained as subject to be dealt with was 84,599. It is complained in the report that local education authorities are not taking full advantage of the existing legal provisions for dealing with the feeble-minded; the expectation that the main source of ascertainment under the Mental Deficiency Acts would be through local education authorities is far from being realized. There are seven areas—four of them in Wales—where no children have been notified by the education authorities, and eighteen others where the notifications are only 0.3 or less per 10,000 of population.

Accommodation in certified institutions did not increase during 1935 at quite the same rate as in previous years, but having regard to the number of schemes now in hand the Board expresses itself satisfied. It is mentioned as a remarkable fact that without any pressure in recent years from the Board so many local authorities have undertaken the provision of at least the first section of a colony for mental defectives. It is recognized that this can never be a popular health service. It makes no sentimental appeal, and does not lend itself to publicity, but the authorities are evidently becoming convinced that to ignore mental defect is neither humane nor economical.

The development of occupation centres and of home training continues. It is pointed out that daily training for imbecile children living at home is as important for them as attendance at elementary or special schools is to their more intelligent brothers and sisters. Many more daily training centres are still required, but centres can never replace the training colony. If the child from the bad or inefficient home is sent to a centre because there is no room for him in the institution it is fair neither to the centre nor to the child; it means only the postponement of his admission to the institution, often at the expense of much suffering, until he has become unmanageable outside and far less trainable than he would have been at an earlier age. The need of clubs for young adult defectives is also stressed, as is the need for a more liberal and uniform practice in the matter of licences. While the great majority of the lower-grade patients will require institutional care all their lives, there are among the medium and high grade or feeble-minded an appreciable number who, after a sufficient period of training and discipline, ought to be given a trial in community life. In some cases the experiment will be unsuccessful, but every effort should be made to return to the community those who have become sufficiently stabilized to live a normal life and to become at least partially self-supporting.

Cases do occur from time to time in which patients on licence are found to have married and are then recalled to the institution. The marriage of defectives is always to be deprecated, but the Board does not believe that public opinion will endorse the continued segregration of defectives merely on eugenic grounds. "It would be deplorable if defectives on trial were encouraged to believe that marriage, for which they are quite unfit, will secure their discharge; but defectives who have shown themselves able to hold their own in industry cannot be abruptly recalled merely because they have married, however unfortunate in their result such marriages are likely to be."

Mental Defect and Crime

It is often stated that the incidence of crime among mental defectives is almost negligible, and certainly the figures seem to bear this out. In 1935 there were 401 persons found guilty of criminal offences who were dealt with as mental defectives. This represents only 1 in 290 of the total number of defectives as reported. There is a certain tendency for crime to increase, particularly in the age-group 21–29. The general increase in crime by juveniles of which a good deal has lately been heard finds little or no reflection in the young mental defective population.

An important matter to which the Board draws attention is the not inconsiderable number of "behaviour" cases which are aggravated by the existence of physical conditions. The patients themselves may not be aware of such conditions, or they may not be sufficiently intelligent to call attention to them. Such examples as ear, nose, and throat, and eye troubles, come to mind. Patients who are difficult on account of their emotional and temperamental instability would still be difficult even if they were physically sound, but there are cases in which emotional instability in a milder degree may be exacerbated by the presence of irritating physical conditions. The need for periodical examinations of defectives as a means of bringing to light the first signs of incipient disease and also of detecting the existence of remediable physical defects is emphasized. In mental hospitals the employment of visiting consultants from this point of view has proved valuable, and such a service might well be extended in institutions for defectives.

Finally, the cost of institutional provision for the mentally afflicted has to be reckoned. The cost of the borough and county mental hospitals in 1935 was £8,500,947, equal to a weekly charge of 26s. 1½d. per patient, and that of certified institutions for mental defectives was £1,100,558, equal to a weekly charge of 27s. 9d. Once again the Board makes grateful acknowledgement of the work of the Mental After-Care Association.

The *Guide to Current Official Statistics* is prepared each year by a standing committee of Government statisticians. Volume xiv, just published, relates to the official statistics for 1935. Its aim is to direct the reader to all current official publications that contain statistics bearing upon any subject, and more especially to outline the nature of the statistics in the volumes to which he is referred, particularly their mode of analysis, and the time and place to which they relate. The *Guide* consists of two distinct sections, a subject-index which is carefully cross-referenced, and a list of publications. It contains 365 pages and is obtainable from the sale offices of H.M. Stationery Office, price 1s.

Nova et Vetera

ANNALS OF MEDICAL HISTORY

The May number of the *Annals of Medical History*[1] shows evidence of the changes foreshadowed when in January the transfer to Messrs. Harper and Brothers was announced; thus a section on "items" of news and another headed "Library" for "publication of matters of bibliographical import" have made their bow. Advertisements have now for the first time been included in the make-up, and, though they deal with books on medical history, this departure from a high ideal may disappoint some of the elderly admirers of the *Annals*. There are seven main articles in the present instalment, two of which are concerned with very different aspects of syphilis. Professor E. B. Krumbhaar describes a case of very probable syphilitic osteo-periostitis in a pre-Columbian Peruvian, and concludes that there is now "an accumulation of evidence that syphilis existed in North, Central, and South America before the landing of Columbus. An interesting analysis of the representations of syphilis in Ibsen's dramas—*Ghosts*, *A Doll's House*, and *The Wild Duck*—is contributed by Dr. J. V. Klaudor, who quotes from the late Edmund Gosse the account of Ibsen's method of collecting material for his writings. In a painstaking summary of the relevant official papers about the 1793 epidemic of yellow fever at Philadelphia, Dr. J. E. Lane tries to clear up the problem of the position held in that emergency by Dr. Jean Devèze. Commander Roddis of the American Navy continues his account of Withering's introduction of digitalis into medical practice. Other attractive aspects of medical history are presented in Dr. E. M. Watson's article on medical lore in Shakespeare, and in Dr. R. Charr's summary of ancient Chinese medicine. New ground, however, is broken by Dr. R. E. Schlueter's essay on obstetrical art at St. Peter's Church in Rome. A charming appreciation is given by Dr. B. Sachs of the late C. L. Dana, neurologist and scholar, who was a leading spirit in the Charaka Club, and published in 1916 under the title *Poetry and the Doctors* an illustrated and annotated catalogue of his collection of medical poets; he was an associate editor of the *Annals*, and his portrait forms the frontispiece of this number. Among the book reviews is one of Sir William Hale-White's *Great Doctors of the Nineteenth Century*.

The July number of the *Annals of Medical History* (vol. viii, No. 4) bears on the cover the portrait, which will be new to most readers, of that remarkable linguist and hygienist W. A. Greenhill, described by a contemporary as "the greatest scholar of Victorian medicine and a physician whose virtues equal his learning." A favourite pupil of Arnold at Rugby, he found the atmosphere at Oxford uncongenial, and did not take honours, although he became an acknowledged classical and Arabic scholar. Dr. P. S. Codellas describes Greenhill's literary, medical, and sanitary activities. The frontispiece displays the fine presence of Sir Henry Acland, once regius professor of medicine at Oxford, and his influence is touched on in an article read in the Section of the History of Medicine at the Meeting of the Association at Oxford on personalities of the Oxford Medical School from 1700 to 1880. Some new information is thrown on John Hunter's experience in Portugal by two recently discovered letters written by John to his brother William, which Dr. Beekman reproduces. Dr. Lynn Thorndike supplements his article in the March number of the *Annals* on little-known names of medical men in Vatican Palatine MSS by an account of unfamiliar medical works by known and anonymous authors among the MSS. The part played by the Nestorians in the fifth century as a connecting link between Greek and Arabic medicine is explained by Dr. A. O. Whipple of New York. In a short article on "the making of anatomies in the seventeenth century in England" Dr. Herbert Silvette argues that the absence of any reference to syphilis in Roman and mediaeval satires militates against the existence of that disease in Europe before the time of Columbus, and that on analogous grounds body-snatching was unknown in England in the seventeenth century. The Elizabethan conception of cardio-vascular physiology, as illustrated by Shakespeare, is discussed by Dr. I. I. Edgar. For quite half his life N. R. Finsen suffered from Pick's pericarditic pseudo-cirrhosis of the liver, and Dr. Roesler records Finsen's careful investigations during the last three years of his life on his urinary output of chlorides and water. The early medical literature of Kentucky is exhaustively described by Major E. E. Hume, and Dr. E. Fischer contributes an historical note on Helmholtz's theory of hearing. A most sympathetic notice of the late Thomas McCrae, with an admirable portrait of this great personality, is supplied by Dr. Archibald Malloch.

[1] *Annals of Medical History*. New Series, vol. viii, No. 3, May, 1936. Edited by Francis R. Packard, M.D. New York: Paul B. Hoeber, Inc., Medical Book Department of Harper and Brothers; London: Baillière, Tindall and Cox. (Volume of six numbers, £2 10s.; single numbers, 12s. 6d.)

Reports of Societies

BLOOD-BORNE KIDNEY INFECTION

At a special meeting of the Devon and Exeter Medico-Chirurgical Society on August 31st, with the president, Dr. A. Hipwell, in the chair, Dr. Hugh Cabot, C.M.G., of the Mayo Clinic, gave an address on blood-borne infections of the kidney—his paper being an epitome of the one he was to present at a conference in Vienna.

Dr. Cabot said that blood-borne infections of the kidney were relatively infrequent compared with ascending infections; the proportion of the ascending cases had been assessed at two-thirds of the whole. At the same time cases of blood-borne infection might easily be overlooked; this was not always a matter for regret, because there were cases capable of recovery without surgical intervention. It was possible, indeed, that nephrectomy might be given the credit of saving a life when the patient could have carried on to ultimate recovery without the loss of a kidney.

Foci of Infection

Turning to the foci from which blood-borne infections might arise, Dr. Cabot mentioned that boils, osteomyelitis, and other surgical infections were well-established sources, but that our knowledge of foci in the throat, nose, and accessory sinuses was on less certain ground in this respect. Working with Crabtree nearly twenty-five years ago he had insisted on careful collection in the male, a catheter specimen as a *sine qua non* in the female, and on centrifuging at high speed for at least one hour; only then would they obtain a pure bacterial sediment and a true estimate of the bacterial invasion. The presence of a few organisms would point to a probable contamination. He gave it as an axiom that bacteria found in the urine not accounted for by a lower urinary tract infection had passed through a damaged kidney. Thirty-two out of forty cases of infections of the head and throat showed bacteria in the urine corresponding to the peripheral infection; control experiments were undertaken, and strengthened these findings.

Perinephritic Abscess

Cases of perinephritic suppuration went on unrecognized and untreated for periods ranging from four to six weeks. They were often wrongly diagnosed as cases of typhoid, and yet if a simple routine were carried out the correct diagnosis could be made at an early stage. First of all, inquiry should be instituted as to a present or past peripheral lesion, whether boil or other local infection or injury. "Pyrexia of uncertain origin" and leucocytosis were common associations in cases which proved to be perinephritis. In a blood-stream infection the urine might have shown no apparent abnormality, or perhaps a transient trace of albumin which had been regarded as of "febrile" portent. Examination of a centrifuged deposit and a smear, which in this instance was of more value than a culture, would assist diagnosis. The precise nature of the organism was not of absolute importance, but the presence of bacteria in an otherwise normal urine was of extreme significance.

Commonly the physical examination would reveal only a localized area of tenderness at the costo-muscular angle. Dr. Cabot emphasized the importance of this sign. Perinephritis was inevitable in some degree in the blood-borne infections, whereas ascending affections did not tend that way. The more severe cases could be classified into three groups. (1) The fulminating, almost never correctly diagnosed and often suggestive of an acute abdominal catastrophe, with abdominal distension and tenderness, nausea, vomiting, and a rapid weak pulse. In all these cases costo-muscular tenderness would be present and organisms would be found in the urine. (2) The acute cases did not suggest the abdominal lesion, the cardinal features being pain, fever, nausea, vomiting, leucocytosis, costo-muscular tenderness, and bacteria in a urine normal save perhaps for a trace of albumin. In a thin patient the kidney could be palpated, and the size estimated from day to day. (3) The subacute cases showed signs and symptoms similar to those of the acute cases, but in a less degree.

Illustrative Cases

Dr. Cabot then described briefly several illustrative cases.

Case 1.—In this case the radiograph showed obliteration of the psoas shadow with slight scoliosis. Here Dr. Cabot pointed out that scoliosis was never an early symptom in perinephritic inflammation. This particular radiograph had been declared negative at first, but palpation of the back supported what proved to be the true reading.

Case 2.—A retrograde pyelogram showed obliteration of the psoas shadow, disappearance of the upper and middle calix shadows, and scoliosis. The surgeon in charge had in the first instance operated for a supposed lesion of the gall-bladder. Eventually, acting on the radiological and other findings, a second operation revealed a massive perinephritic abscess together with a so-called carbuncle of the kidney—a term to which Dr. Cabot took exception as loose and unscientific. Two years after the operation the kidney appeared to be normal.

Case 3.—This patient had had pain and tenderness for seven days. The pyelogram showed disappearance of the middle calix, without obliteration of the psoas shadow. Operation disclosed an abscess in the region of the calix.

Case 4.—This patient was a severe diabetic, and six weeks before Dr. Cabot saw him a diagnosis of appendicitis had been made, but the diabetic symptoms contraindicated appendicectomy. Later a large non-tender mass was found in the right loin and a tumour was suspected, a suspicion which was thought to be confirmed by the pyelogram. Dr. Cabot refused to remove the kidney on his reading of the pyelogram, where one calix was shown to be elongated and fragmentation of the infected fluid was demonstrable. A massive perinephritic abscess and a hole in the kidney were dealt with at the operation, which not only spared the kidney, but had the effect of restoring it to an apparently normal condition, as noted two years later. In connexion with this case Dr. Cabot mentioned that he had knowledge of twenty-four cases diagnosed as malignant which had proved to be inflammatory.

Case 5.—This patient had a ten-days history of acute pain in the left flank and pyrexia, with leucocytosis, and extreme tenderness in the left costo-muscular area. The right kidney was well outlined by an excretion pyelogram, but was excreting slowly; the left kidney was not functioning, and the psoas shadow was obliterated on both sides. The case progressed to complete recovery without operation.

Prognosis and Treatment

The fulminating cases would end fatally unless promptly treated; there was the possibility of a bilateral infection, although the signs might only be demonstrable in one kidney. Nephrectomy was a desperate measure, since the degree of function of the other kidney was not known, and the urgency of the case negatived the carrying out of any elaborate tests.

In the acute and subacute cases urography would often show a normal kidney on the unaffected side. In these patients it was generally stated that an operation should be undertaken on the affected kidney, but Dr. Cabot advised simply careful watching for so long as the resistance of the patient warranted conservative measures. Lack of evidence of damage to the renal cortex was an indication for avoiding operation. If bacteria had reached the urine a perinephritic abscess would follow, but the signs were not easy to demonstrate until the abscess broke through the lumbar fascia. Whenever a case had proved resistant and had recovered without operation he advised ten clear days in bed from the termination of the pyrexia. Quite a number of acute cases could be spared operation if treated conservatively with skill and care. Indications for operation were the presence of a massive abscess, of perinephritic suppuration, or where the patient was losing ground. In a case diagnosed early often nothing was found at operation. The explanation here was that a relatively small area was affected, but unless the fat capsule was removed this area remained unexposed. There seemed to be no agreement on the technique to be employed in the treatment of massive abscesses, but in the majority of cases Dr. Cabot considered that drainage would prove sufficient. A decision would be very difficult to make when perinephritic inflammation and massive abscess occurred together, but here radiography would be helpful. Perinephritic abscess with massive renal abscess would recur unless the latter was drained.

Discussion

In the discussion which followed Dr. C. J. FULLER, Dr. F. A. ROPER, Mr. A. A. GAIRDNER, and Mr. NORMAN LOCK took part. In replying to the points they had raised Dr. CABOT said that when working in France on cases of trench nephritis in 1916 he had found that 90 per cent. showed the presence of streptococci in the urine. He had not been able to find bacteria in the urine of cases of scarlet fever; the renal complications were probably toxic. He had thought at one time that the right kidney was more commonly infected than the left in these cases, but he now wondered if he had been correct. In his opinion to-day the disproportion, if any, was slight.

On the motion of the PRESIDENT, seconded by Mr. NORMAN CAPENER and Mr. A. L. CANDLER, a vote of thanks was conveyed to Dr. Cabot for his address.

England and Wales

Epsom College: Scholarship and Pensions

The council of Epsom College will shortly elect a girl to a St. Anne's scholarship of £110 a year. Candidates must not have been less than 9 years of age on July 15th, 1936, and must be orphan daughters of medical men who have been for not less than five years in independent practice in England and Wales. Application must be made by October 15th on a form to be obtained from the secretary of the College, 49, Bedford Square, London, W.C.1.

The College will also shortly award "France" pensions of £30 a year each to three qualified medical men in reduced circumstances. Candidates must be not less than 55 years of age, and, if single, must not be in receipt of an income, independently of any allowance from the College or the Royal Medical Benevolent Fund, of more than £100 per annum. If the candidate is married the combined incomes of him and his wife must not exceed £150 per annum. Forms of application may be obtained from the secretary, 49, Bedford Square, W.C.1, and must be returned to him, duly completed, not later than Wednesday, October 28th next.

Congress of the C.S.M.M.G.

The annual congress of the Chartered Society of Massage and Medical Gymnastics was held at the Bedford College for Women, Regent's Park, from September 21st to 25th. It comprised lectures, lantern and film demonstrations, practical classes, the annual general meeting and dinner, a sherry party, and visits to the Pioneer Health Centre at Peckham, fracture clinics at L.C.C. hospitals, and the

physiotherapy and massage departments at the Middlesex Hospital. Prominent among the topics discussed was posture ; and lantern or film lectures were given on inborn and acquired peculiarities of posture, the relation of movement, and the treatment of abnormalities. Two of the lecturers, who were mostly medical practitioners, dealt with breathing exercises ; one discussed the physiological aspects of breathing exercises and the other described prophylactic and remedial breathing in connexion with physical exercises. Other subjects included the muscular mechanics of the foot, diet and physical fitness, the application of massage and exercises to expectant and nursing mothers, psychoneuroses of childhood with special reference to postural defects, club feet in children, and diseases of the circulation. Dr. Mennell's film on manipulation of the joints of the upper extremity was shown, and lecture-demonstrations presented different modern methods in the treatment of asthma. The Founders' Lecture was given by Mr. R. C. Elmslie, who took as his subject the restoration of function. His great services to the society during many years were recognized by the presentation to him of a testimonial. The attendance at the congress was exceptionally large, and the society, which now numbers over 10,000 members, revealed there its strength and enthusiasm. A special congress issue of the journal of this society is being compiled ; it will contain the text of the lectures delivered and as many of the lantern illustrations as possible. It will be recalled that all the members of this society are pledged to work only under the direction of medical practitioners.

Touch in Massage and Medical Technique

On September 24th Professor Katz, formerly of Rostock, lectured on the " Role of Touch in Massage and in General Medical Technique." He characterized massage as the successor of the healing touch of olden days. In modern medicine the sense of touch was employed for diagnostic purposes in palpation and percussion, and for therapeutic purposes in massage. Percussion was not dependent upon the sense of hearing, but upon vibratory sensations. This was made evident by the fact that doctors whose hearing was deficient were nevertheless capable of carrying out percussion successfully. The vibratory sensation was not, as had been formerly believed, a variation of touch sensation. For example, the tongue, the organ most sensitive to tactile impressions, was incapable of feeling even such an obvious vibration as that of the radial pulse. Vibratory sensation was of importance in the education of deaf mutes. In Germany special apparatus had been devised to transfer vibrations from the larynx of the teacher to the hand of the pupil. By this means it was possible to instruct as many as eight pupils simultaneously, and these deaf mutes had succeeded in learning not only German, but a foreign language. With regard to palpation the Russian Professor Hausmann of Minsk had shown that this was a process of considerable complexity. To produce reliable results a correct co-ordination of the various movements of the hands and arms was essential. The sensations received in palpation were based upon correct movements, and these movements were themselves suggested by the sensations. There was, indeed, a close reciprocal interdependence between the sensory and motor functions of the palpating hand. Hausmann had also demonstrated the possibility of successful palpation with fingers rendered anaesthetic, and it might therefore be inferred that the recognition of viscera palpated was partially controlled by the sense organs of the muscles and joints. Movement was the creative factor in stereognostic analysis. Dr. Katz stressed the wide range of effects produced solely by the hand in massage, which had been termed " therapeutic palpation." The problem involved in seeking the explanation as to why a process as simple as massage should produce such diverse results was comparable to the problem confronting psychologists in the field of touch. The monotony of touch stimulation did not prevent the production of an amazingly large number of complex patterns. These phenomena were due to dynamic, temporal, and local factors, inherent in the stimulation. There was scope for collaboration in research between the masseur and the psychologist. Even at the present day the medical profession did not, in Dr. Katz's opinion, sufficiently acknowledge the importance of massage, and this was attributable to the fact that it had been developed as a practical technique, lacking a sound experimental basis. In psychology and biology the atomistic view had been abandoned and the body was regarded as a unit, reacting as a unit. This principle was applicable to massage. Peripheral effects were brought about by sensory impressions produced in the skin, muscles, and joints, and the study of these sensations and the consequent reactions was a field for the psychologist as well as for the physiologist.

Medicine and Modern War

Through invitations issued by the Medical Peace Committee a meeting was held in London on September 24th, in the Hastings Hall of the British Medical Association House. The chair was taken by Dr. E. P. Poulton. About fifty doctors were present. It was decided that the time was ripe for the establishment of a British section of the International Medical Association for the Prevention of War, which was started in 1932, and which already has widespread connexions in the medical profession all over the world. Each section is independent in function, the international body serving as a means of transmitting information and co-ordinating research. The work of the section in this country will include precise and critical examination of both the causes and the medical consequences of modern war in general, and presently of the gas and air raid defence measures in particular. Research committees are in process of establishment upon which volunteers are asked to serve. A subscription of 5s. per annum was proposed. All communications and donations should be addressed to the honorary secretary, Dr. Cecile Booysen, 12, Kent Terrace, Park Road, London, N.W.1.

Scotland

New Royal Infirmary at Aberdeen

The new Royal Infirmary of Aberdeen, which has been erected on a site of about 100 acres at Forresterhill on the outskirts of Aberdeen, at a total cost, including equipment, of about £525,000, was opened on September 23rd by the Duke of York. An appeal for subscriptions was made in 1927 by Sir Andrew Lewis, who was then Lord Provost, and a sum amounting to £425,000 was secured. About one-half of the remaining £100,000 has been collected by Lord Provost Edward W. Watt, and it is expected that the full amount will soon be obtained. The Duke, who was accompanied by the Duchess, was received by the Lord Provost and Mr. Alexander Lyon, chairman of the board of directors of the Infirmary. The latter said that the Aberdeen Royal Infirmary dated back for nearly 200 years, having been founded in 1739 by the magistrates and town council of Aberdeen. The old Infirmary buildings at Woolmanhill had originally been built on the outskirts of the city, but were now in a congested site in its centre. These buildings had been altered and enlarged at intervals, until in 1837 an entirely new hospital was erected. Again, towards the end of the nineteenth century the Infirmary had been to a large extent reconstructed by the building of new medical and surgical pavilions. Despite various additions since that time, the hospital had become inadequate for the needs of the citizens, and further extension was impossible owing to limitations of the site. At the same time other medical institutions in the city, such as the Royal Hospital for Sick Children, needed renovation, and the opportunity was thus offered of concentrating the hospitals and medical teaching facilities of the city on some elevated site where conditions would be most favourable. This great conception of a community of hospitals centred round a teaching school was whole-heartedly endorsed by the various medical institutions of the city, and thus the Aberdeen Joint Hospitals Scheme came into being.

The town council, the University court, and the Infirmary managers had secured the site close to the Royal Mental Hospital upon which to build the new Infirmary, a new children's hospital, a new maternity hospital, and such University buildings as were considered necessary for the teaching work of the medical school. The Sick Children's Hospital had been built and opened in 1928, the new Royal Infirmary was completed, the Maternity Hospital would soon be ready for occupation, and the foundations of the University buildings were now being laid. Every care had been taken to incorporate in these buildings the most up-to-date ideas in hospital construction, and to provide the most efficient equipment. The Duke of York read a message from the King recalling with pleasure that he had laid the foundation stone of the new building in 1928, and intimating that he would visit the Infirmary later and see for himself the work which it was destined to perform. The Duke of York, continuing, congratulated the citizens of Aberdeen on a magnificent achievement. The city had done pioneer work, he said, for it had realized the importance of co-operation in centring in one area the facilities for the treatment of the sick. Forresterhill would be a Mecca of healing and medical learning. The Duke then unlocked the door with a gold key and declared the building open, thereafter making a tour of inspection. It was intimated during the proceedings that a further gift of £5,000 had been received from Sir Robert Williams of Park as a memento of the opening.

Remedy for Defective Diet

At a conference in the Glasgow and West of Scotland College of Domestic Science on September 19th, Professor E. P. Cathcart, discussing "Nutrition and the Food Budget," said that the person who could devise a workable scheme to bridge the gap between the end of school instruction and the time when young women married would alter the whole of the nutrition of this country. There was a considerable difference between satisfying the cravings of hunger and building up a healthy body. Good nutrition implied far more than the supply of food both quantitatively and qualitatively adequate, for many other factors like housing, fresh air, happiness, and sleep played important parts. At the recent Committee on Health Services he heard much evidence concerning the state of nutrition in Scotland, and medical witnesses agreed that the feeding of the people had definitely improved, and that there was no evidence of widespread malnutrition. He did not believe that a mere increase in wages would solve the problem of defective diet; improvement could be achieved even with the means available. Many housewives were very willing to learn, and improved education was badly required in budgeting, marketing, and cooking. Many people seemed to lack imagination, and were so bound by tradition and convention that they could only think in terms of steaks, cutlets, mince, sausages, and chips. He wondered why greater use was not made of fish, especially herring, which was one of the most valuable protective foods. Cheese, another valuable and cheap protective food, was more or less ignored. Skimmed milk, despite its loss of fat, was a valuable source of good protein and minerals: why was it not more readily available? Why, too, was not greater use made of cheap vegetable foods such as dried peas and beans? He believed education could defeat the mountains of tradition if it were of the proper type, but it was not school teaching that was required so much as education of young women after they had left school. There should be demonstrations by keen, sympathetic, and intelligent instructors; the teaching should be practical, and recipes not too complicated. Dr. John Jardine of the Scottish Education Department said his Department believed that every boy and girl before leaving school should receive instruction in elementary biology and in physiology to an extent sufficient to enable them to understand the rules necessary for the proper care and development of the body; and that all girls, in addition, should have some instruction in domestic science and child management. No new school for girls over 12 would be approved by the Department unless adequate accommodation had been provided for the teaching of domestic science. It was unfortunately true, however, that girls who left school at 14 or 15 to take up employment in factories, shops, or offices, had forgotten most of what they learned at school by their twenties, and for that reason it was of the utmost importance to encourage them to attend refresher courses in continuation classes. The Department would soon issue a circular dealing with the teaching of domestic subjects in schools, and education authorities would be asked to reconsider their schemes in conformity with it.

Education Department Appointment

Dr. John Jardine, O.B.E., has been appointed Assistant Secretary to the Scottish Education Department. Dr. Jardine graduated M.B., Ch.B. at Edinburgh University in 1904, proceeding to the M.D. in 1909, and joined the Royal College of Surgeons as a Fellow in 1908. He also took the Edinburgh D.P.H. in 1905. After some time spent in general practice he became school medical officer for the counties of Midlothian and Peebles, and during the war he served in the R.A.M.C. In 1924 he became inspector of physical training to the Scottish Education Department, and in 1931 was appointed Junior Assistant Secretary. Dr. Jardine has occupied himself much with problems connected with the health of school children and their physical training, and was a member of the Departmental Committee on Scottish Health Services which issued its report a few months ago.

CORRESPONDENCE

R.M.B.F. Christmas Gift Fund

SIR,—I have hesitated this year in making my usual appeal to your readers for the Christmas Gift Fund of the Royal Benevolent Fund, because we have had a generous response from many members of the medical profession to our centenary appeal for new subscribers and for donations. My hesitation was, however, dispelled by the following letter from one of our annuitants, a spinster lady of 75, who has been lame since she was 15. When submitting the last return of her very small income she wrote:

"The kind Christmas gift of £1 10s. must be added to my income. It comes, a regular gift, but I know you might not be able to send it to me. Every Christmas I am just a little expecting and very much hoping to receive it."

This letter made me feel that our annual Christmas Gift Fund must not suffer. We have between 700 and 800 names on our books and, as in previous years, we hope to send each a Christmas gift of 30s. I ask for very generous help from all.—I am, etc.,

THOS. BARLOW,
September 28th. President.

⁂ Cheques should be made payable to the Honorary Treasurer and sent to the Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, London, W.1.

Cervical Gland Tuberculosis

SIR,—It would be a pity if for want of an answer Dr. Brian C. Thompson's case against surgery (*Journal*, September 19th, p. 584) were thought to represent the last word on this important subject.

Let me agree with him that "... complete removal of tuberculous cervical glands is unattainable in practice." As in every other form of tuberculosis, surgery is only incidental to treatment designed to stimulate or permit the patient to cure himself. In this particular case the surgeon aims at removing an important focus of disease, thereby diminishing the task imposed upon the body's resistance. If at this point he sits back and writes "finis" to the cure, if he leaves tuberculous tonsils,

tuberculous milk, or tuberculous parents to pour in fresh doses of infection, then it is not surprising if patients return with fresh masses of glands. Unfortunately it is sometimes difficult to get public authorities to agree to the wisdom of allotting sanatorium beds to such patients; and it is often difficult to get patients to see the need for prolonged care, so impressed are they with the soundness of their scars and the disappearance of the lump from their necks.

This brings me to my second point: surely Dr. Thompson has been unfortunate in his experience of surgery in this disease. I note that he says these patients are all of the "hospital" class. Does this mean that they are admitted direct from their homes, operated on in a city hospital, and discharged in a week or ten days? In patients operated on in a sanatorium, after three to four weeks' preliminary treatment, I should say that it is quite the exception to see anything but primary union in clean cases—that is, where the skin was intact before operation. To talk of 50 per cent. of the cases having a "persistent discharging sinus" does not really present quite a fair picture.

It is very difficult to compare cases of excision with those in which things have been left to nature. With few exceptions these are the mild infections, in patients with a high resistance leading to localized disease. In the exceptional case where really extensive glands have been left to "spontanous ulceration" the cosmetic result is apt to be dreadful. Indeed, on several occasions I have been asked to do something to improve these unsightly scars. I think 10 per cent. is too high a figure for nerve injury in this country. A temporary paresis of the corner of the mouth is not very uncommon. Spinal accessory paralysis in my experience is very rare.

I will not follow Dr. Thompson into the very difficult and controversial subject of the relationship between cervical gland tuberculosis and pulmonary phthisis. I feel sure that the doctrine sometimes preached that the possession of tuberculous glands in the neck is an insurance against lung disease is a dangerous one. I do not think that operation will affect this matter very much one way or the other. Fortunately any such cases form only a small minority of those we are considering. It is to the bovine cases that my remarks must be taken to apply.—I am, etc.,

Liverpool, Sept. 21st. JOHN T. MORRISON.

SIR,—Dr. Brian C. Thompson (*Journal*, September 19th, p. 584) seems to have been unfortunate in seeing such a large percentage of poor results following operation. Possibly this is because the surgical failures tend to gravitate to the tuberculosis dispensary, whereas the surgical successes are at school or in full work. The object of surgery is to aid nature, and if breaking-down tuberculous glands are removed carefully and skilfully months—even years—of distress from discharging sinuses in the neck are usually obviated.

It has been my experience that in the case of localized tuberculous cervical glands which are beginning to break down, or have reached the stage of collar-stud abscess without involvement of the skin, complete extirpation of the involved glands and the abscess cavity, with primary closure (*Journal*, January 2nd, 1932, p. 11), followed by ultra-violet irradiation, gives speedy and pleasing results. Dr. C. A. Dowd, whose experience in these cases is unique, after following his extensive series of cases for upwards of twenty years, was able to show that 86 per cent. of his patients remained well and had no recurrence, though numbers of them dwelt in insanitary tenements.—I am, etc.,

London, W.1, Sept. 23rd. HAMILTON BAILEY.

Hexamine in the Treatment of Infections

SIR,—The correspondence on this subject raises a perennial question—the *modus operandi* of hexamine, the compound of ammonia and formaldehyde which masquerades under a large number of synonyms. That it is in itself not antiseptic, even in such considerable strength as 5 per cent., is agreed, and that its action, whatever it may be, is due to the liberation of formaldehyde in acid media, has for long been the accepted opinion (although formidably attacked by McDonagh many years ago). There is no doubt that this liberation does occur; a considerable proportion of the hexamine administered is decomposed in the stomach, even up to one-third of the total; a proportion also is decomposed in the common mixture with acid sodium phosphate. The proportion depends upon the degree of acidity and the time of action. Unless these be gravely obstructed, the time factor will prevent the attainment of an effective concentration in the kidney or ureter, even in the most acid urines. In an obstructed bladder with very acid urine the amount liberated may exert an appreciable inhibitory effect on bacterial growth; in a bladder emptied with normal, or particularly with increased, frequency no appreciable effect is to be seen; and those who have, with the philosophic doubt so lamentably lacking in most clinical observations of to-day, troubled to test for formalin in urine in cases "under hexamine," know that it is absent even in the faintest trace in the great majority. It must be observed that "antiseptic" action in the surgical sense has never been recognized, and at the most an "inhibitory" effect is noted. Further, a careful examination of numerous bacteriological investigations strongly suggests that, within the limits of experimental variation, substantially the same inhibitory effects are to be obtained by *p*H variations in the urine, apart entirely from the use of hexamine. In plain terms, the most potent weapons in the treatment of urinary infections are the acidifiers and the alkalizers.

With regard to the use of hexamine in biliary infections, the same spirit of philosophic doubt has led me to have the bile examined in cases of drainage of the common duct; in sixteen cases, some with doses of hexamine as high as 300 grains a day as recommended, there has never been detected any formalin in the bile. (It may further be observed that cholecystitis is commonly dependent upon obstruction, which prevents bile from entering the gall-bladder!) Further, the cerebro-spinal fluid has similarly been examined, again with consistently negative results (the use of low spinal analgesia in urology has provided the obvious opportunity), so that the hexamine treatment for meningitis does not appear to rest on any more dependable basis than its use in cholecystitis. The only striking result I have observed from its prophylactic use in "fractured base" has been a brisk and perplexing haematuria. This, indeed, is perhaps the most important fact to know about hexamine—that its discontinuance may clear up promptly a haematuria or a vesical irritability sometimes of a very severe degree.

The use of the drug in so many other conditions (for example, parotitis, sinusitis) appears to be due to a rather widespread impression that its administration leads to a liberation of formaldehyde in antiseptic strength from practically every body surface and cavity; it is a belief that is in need of emphatic contradiction. The grounds for the belief are partly the *post hoc, ergo propter hoc* type of reasoning still prevalent in therapeutics—the "good results are reported" style of thing—and partly the influence of commercial advertising in its insidious modern "scientific journal" form, which has been successful in foisting on the profession recently so many inert and valueless preparations.—I am, etc.,

London, W.1, Sept. 26th. C. JENNINGS MARSHALL.

Treatment of Hallux Valgus and Rigidus

Sir,—May I put forward a solution to the problem of operation for hallux rigidus and valgus? The two conditions are essentially different; in one the patient complains of a stiff and painful joint, in the other of an unsightly splayed fore-foot with metatarsalgia and pressure over the first metatarsal head. The operations in vogue have grave disadvantages. Resection of the metatarsal head gives a good cosmetic result, but by lessening the weight-bearing capacity of the first metatarsal head not uncommonly leads to intractable metatarsalgia. On the other hand, hemiphalangectomy with remodelling of the non-weight-bearing part of the first metatarsal head sets the fore-foot free to splay unchecked, for the fore-foot is held together by the structures inserted into the proximal phalanx of the big toe, and by them alone.

In 1934 I devised an operation by which the adductor structures are not detached but are given a firmer hold with better control, and the weight-bearing surface of the metatarsal head is not diminished but is made bigger and better. The metatarsal head is remodelled, the adjoining surface of the proximal phalanx erased, and the phalanx itself is completely detached except for the structures running into the fibular side of its base. The phalanx is then grasped with lion forceps and drawn round to cap the tibio-distal aspect of the metatarsal head (as the phalanx is drawn round the head is pushed inwards). The distal part of the phalanx is then cut away, leaving a phalangeal cap, which is closely fitted over the metatarsal head and fixed in place with a bone peg. This cap, which is modelled to choice, enlarges the weight-bearing surface of the head, and the adductor structures are made taut and given direct control of the metatarsal head.

An article describing this operation and the end-results of thirty cases is in the press. I am glad to say the results confirm the soundness of the design.—I am, etc.,

Oxford, Sept. 21st. G. R. Girdlestone.

Sir,—Operations for hallux rigidus and hallux valgus should not be performed in a routine manner. The appropriate operation should be arrived at only after a careful consideration of the age and occupation of the patient and the severity of the condition. Simple excision of the exostosis in hallux valgus is usually the best treatment for (*a*) very early cases in young patients, (*b*) very severe cases in elderly patients—for here the deformity cannot increase to any extent.

More radical operations for hallux valgus should be reserved for cases of moderate severity in active patients. The exact operation performed is largely determined by the previous experiences of the surgeon in such cases. If excision of the head is performed this should never be through the neck of the bone, otherwise a troublesome metatarsalgia will develop in later life. If Kellar's operation is carried out sufficient of the phalanx must be removed to give a mobile joint, but if too much is removed a flail toe results.

In hallux rigidus operation should be avoided in patients under, say, 18 to 20 years of age. In many cases Kellar's operation, combined with a careful trimming of the metatarsal head, gives very good results. Particular attention should be paid to the outer aspect of the head, where an exostosis often projects into the interosseous space and causes a good deal of pain. When the head of the metatarsal is very hypertrophic I prefer to perform Mayo's operation. But whatever operation is performed careful after-treatment is essential—relief from all weight-bearing and skilled physiotherapy.—I am, etc.,

Hove, Sept. 21st. J. M. Turner, F.R.C.S.

Preventive Measures in Dermatology

Sir,—I wish to draw attention to a misleading statement in Dr. R. M. B. MacKenna's paper on preventive measures in dermatology in the *Journal* of September 19th (p. 581). In the paragraph on fat metabolism in psoriasis he reports the work of Grütz and Bürger, and states:

> "If 100 grams of olive oil in which 5 grams of cholesterol have been dissolved are given to a man who suffers from psoriasis and a similar potion is given to a normal person . . . the psoriatic will show an average of 40 per cent. increase in the total fat, cholesterol, and phosphatide content of his serum."

On turning to the reference (*Klin. Woch.*, 1933, xii, 373) I find that it is the resting value for total fat and cholesterol that is 40 per cent. higher in psoriatics than in the normal, and that there is, in fact, a smaller increase per cent. in psoriatics four and eight hours after drinking the potion than in the normal.

The work of Grütz and Bürger has also been commented on in an editorial article in the *Lancet* (1934, ii, 605), in which a similar false impression is given. This article refers to another paper by Grütz, in the *Deut. med. Woch.* (1934, p. 1039), on the treatment of psoriasis, which is not very clear on this point.—I am, etc.,

Middlesex Hospital Medical School, W.1, Sept. 21st. D. Russell-Davis.

"De Morgan's Spots"

Sir,—Errors die slowly. In the last editions of the best-known English and American dictionaries of medical terms these little red telangiectatic or angiomatous cutaneous spots are described as occurring specially in cancerous patients. I believe that abroad, under the heading "ruby spots," they have been said to be especially present in cases of chronic myocardial weakness. They really can be found in all patients with cancer, but the only causal connexion with cancer seems to be the age of cancer patients. I believe that practically all persons beyond middle age, whether they are suffering or not from cancer or myocardial weakness, present well-marked De Morgan's spots, and many healthy children have one or two typical spots of the same kind. Certainly De Morgan's spots cannot be regarded as a "skin eruption" suggesting the presence of cancer, whereas well-marked acanthosis nigricans, when found, does indicate the presence of cancer (in the abdominal viscera). So rare, however, is the latter dermatosis that, paradoxically, one might examine some hundreds of cancerous patients without meeting with acanthosis nigricans a single time. In order to stress this apparent paradox one might say: De Morgan's spots are present in all cancerous patients, though they have nothing to do with the cancer; very few cancerous patients have acanthosis nigricans, which, however, is generally due to the presence of cancer. I am very anxious to ascertain where Campbell De Morgan, F.R.C.P., F.R.S., the well-known surgeon of the Middlesex Hospital, described the spots now associated with his name.—I am, etc.,

London, W.1, Sept. 23rd. F. Parkes Weber.

Electrical Stimulation

Sir,—Over-condensation of my remarks on visual stimulation, as reported in the *Journal* of August 15th (p. 352), unfortunately conveys an impression opposite to the facts. I refer to the remarks on artefacts. Age-long tradition still teaches that natural stimulation can be exactly studied in the laboratory by the action of electric currents on the frog's muscle-nerve preparation. Equally

exact studies of stimulation have now been made by observing and recording the reactions of beating hearts to drugs, such as adrenaline, etc., and these show that the stimulation of a beating heart is an entirely different process from that of exciting quiescent nerve or muscle with electric currents. There is, however, no doubt that the stimulation of a beating heart by drugs and hormones is a natural stimulation. Hence the conclusion that there must either be two kinds of natural stimulation, or else age-long tradition has led physiologists in particular to believe that they were studying as natural stimulation what is a laboratory artefact. The behaviour of naturally stimulated tissues confirms the conclusion concerning the artefact. This further implies that any explanation of natural stimulation based on such phenomena as the chronaxie, etc., can be reasonably assumed to be invalid.—I am, etc.,

W. Burridge.

September 7th.

Stress of Homework

Sir,—Dr. Brockbank, in his valuable article on homework, in the *Journal* of September 19th (p. 587), hardly touches on what appe[ars] to me to be the main factor in overwork in young p[eople]. Stress arises mainly because the work is too difficu[lt] and therefore uninteresting. It is the amount of worry connected with the work rather than the amount of time spent over it that is apt to affect the general mental and nervous condition of school children.—I am, etc.,

C. R. Cooke-Taylor, D.P.M., M.R.C.S.

London, W.1, Sept. 19th.

Mechanized Medicine

Sir,—I am all in favour of complete candour among ourselves as regards professional matters, and I have no reason to doubt that "Juvenis" is sincere in his opinion about the panel system and as to the methods adopted in his practice. But I should be very sorry—and indeed I refuse—to believe that his experience is typical. I have had the good fortune to come in close contact with many busy insurance practitioners who have never had any doubt as to their ability to give their panel patients that which they contract to give—namely, a good general practitioner service.

"Juvenis" tells us that the majority of panel patients do not get that full examination they ought to have, because he hasn't the time to do it. His surgery hours are "cluttered up" with patients who have to be "rushed through." Why? The average panel list is 1,000. Each insured person requires an average of about five services a year. That is to say that the thousand require 5,000 services in a year. Let us state "Juvenis's" problem at its worst and divide this by 300 days (leaving out Sundays and public holidays). This means some sixteen services daily. Of these, say, six would entail home visits, leaving ten to be given at the surgery. Some of these latter would be routine, such as certification and renewal of prescriptions. Only a few would be new cases. Where is the need for any "rush"? Assume that the doctor has twice as much private work—and this is not by any means always the case; that gives us a daily total of eighteen home visits and thirty surgery services daily divided into two or three sessions. I submit that in *a well-organized practice* every patient needing it could have the thorough examination that he or she ought to have. In times of epidemics, of course, *all* patients have to take what it is possible to give, but in many cases detailed examination can be deferred for a time.

I should like to hear what some of my old friends think of "Juvenis's" dilemma. The matter is one of great importance. Consciously or otherwise he is giving a handle to those ill-informed or malicious critics who have for so long worked this fable about "queues of panel patients," etc., for so much more than it is worth. I believe it to be a gross libel on our system, and on the majority of the doctors working it. If it were true that the conditions of national health insurance make it impossible to give what every patient has a right to expect, it would mean that many thousands of general practitioners in this country are complacent parties to a fraud on the public and an organized insult to the honourable traditions of our profession. I have always understood that *every* patient who entrusts himself to the doctor of his choice can confidently expect the best that that doctor can give him. So I particularly dislike the snobbish assumption running through the letter of "Juvenis" that there is some subtle difference between the private and the "panel and parish" patients. Surely, before Heaven and the doctor we are all equal!—I am, etc.,

Alfred Cox.

London, W.1, Sept. 26th.

Traumatic Oedema

Sir,—I have read with interest Dr. L. C. Hill's article on traumatic oedema in your issue of September 26th. No mention is made of the most useful form of treatment in such cases as he describes—namely, infra-red irradiation.

It is a sweeping and incorrect statement to make, that "the application of physiotherapy at any period other than in the very late stages is unjustifiable." American, Continental, and English observers who have used infra-red irradiation in cases of traumatic oedema have proved its worth times without number, particularly in the early stages. I would therefore cordially recommend Dr. Hill to substitute this form of treatment for some of the methods he has used without success.—I am, etc.,

W. Annandale Troup.

London, W.1, Sept. 25th.

Measures for Relief in Spain

Sir,—The condition of the sick and wounded of the fighting forces on both sides in the Spanish civil war, and of the distressed civilian population congregated in the war areas of that country, is such as to make all who desire to relieve human suffering eager to do something to provide the relief so urgently needed. To attempt in this letter to describe the prevailing conditions would be redundant, as our newspapers are keeping this country fully informed of the appalling and heart-rending situation in Spain.

The International Red Cross Committee at Geneva recently sent a representative to Spain, and he has been able to conclude an agreement with the Government at Madrid and with the Junta at Burgos whereby both sides in the civil war in Spain undertake to respect the Geneva Convention and the Red Cross emblem and to accept the much-needed assistance of the Red Cross societies of the world. Representatives of the International Red Cross Committee are proceeding to Barcelona, Madrid, Burgos, and Seville to establish relief services. This relief will be given impartially to the sick and suffering of both combatant forces, and to the sick, needy, and homeless of the civil population who are suffering so cruelly.

The British Red Cross Society earnestly and urgently appeals to the British public to provide by generous donations of money the means whereby the practical sympathy of this country can go out to those who are in such dire distress in Spain. The British Red Cross

Society, in response to the appeal of the International Red Cross Committee, is sending at once £500 towards the provision of medicines, dressings, and comforts necessary for the treatment of the sick and wounded, and trusts that the response it will receive in reply to this appeal will enable further remittances to be sent at once.

While it is hoped that donations will be sent to be used impartially by the Red Cross for both sides, and for the suffering civilians, subscribers can indicate, if they so wish, their own desire as to the use of their money, and may be assured that every effort will be made by the International Red Cross Committee to meet their wishes. It is not at present the intention of the British Red Cross Society to send out any personnel. Cheques should be made payable and sent to Sir Arthur Stanley, British Red Cross Society, 14, Grosvenor Crescent, London, S.W.1, and crossed "Spanish Relief Fund—Coutts and Co."—We are, etc.,

ARTHUR STANLEY,
Chairman, Executive Committee.
EDWARD STEWART,
Deputy Chairman, Executive Committee.
ARTHUR C. ABRAHAMS,
Chairman, Finance Committee.
H. B. FAWCUS,
Director-General.
F. C. DAVIES,
Secretary.

September 23rd.

"From a Surgeon's Journal"

SIR,—Owing no doubt to an error in the preparation of the index, certain incidents in Professor Harvey Cushing's recently published book, *From a Surgeon's Journal, 1915–1918*, are attributed to myself. The matter would be of no importance except for an alleged remark of mine, on page 154, about Sir Almroth Wright. As I never made this, and should in any case have been wholly incompetent to criticize Sir Almroth's work, I should like to make this clear and say that I did not have the pleasure, and honour, of meeting Professor Cushing until about ten years after the war was over.—I am, etc.,

General Post Office, E.C.1, Sept. 29th. H. H. BASHFORD.

Medico-Legal

A DEATH ATTRIBUTED TO VERONAL

Cases are occasionally reported in medical literature in which a patient has shown a dangerous or fatal idiosyncrasy to drugs of the barbituric acid group. The Croydon coroner recently held an inquest on a man who died in hospital. The patient had complained of pain in the right leg, which kept him awake. His doctor had said that he might be suffering from influenza, and two days afterwards, as he needed sleep, gave his wife a prescription for four tablets of veronal. She gave her husband two that evening, and he fell asleep. He woke after two and a half hours, and was very restless and later delirious. In the early morning he was unable to speak, although he was fully conscious. He was taken to hospital next day, and died shortly after admission. Necropsy showed that death was due to coma following cardiac failure. The family doctor said in evidence that when he first saw the patient he was very ill and had a temperature of 103° F. On the following day, after taking the tablets, he had been much worse, and the temperature had risen to 105.4° F.; the doctor diagnosed meningitis. The hospital physician said that the patient when admitted was partly conscious and had some glimmer of intelligence; he was possibly suffering from influenza or meningitis. This doctor and an honorary physician thought that the condition was possibly due to a drug. The pathologist said that the heart failure was probably caused by barbitone, and that 3 per cent. of the population were intolerant of this compound. He added that several medical men of his acquaintance had used barbitone with success until their first fatal case, and then they never used it again. He thought that the German practice of dispensing it in powder was safer, because the dose could be more easily regulated. From the newspaper report available[1] the medical witnesses seemed to be fairly certain that the death was due to poisoning by the veronal. It is significant, however, that the patient had a high temperature before the tablets were given. The doctors do not seem to have been asked their opinion about the possibility of a disease having contributed to the death.

Obituary

WILLIAM JOHN TAGGART, M.B., CH.B.

The following personal tribute has been received on the death of Dr. W. J. Taggart, which occurred some days ago while on holiday.

The sudden but not unexpected death of Dr. John Taggart at the early age of 52 came as a shock to those who knew him best. His intimate friends recognized, as he did himself—for it could not be concealed from him—that the end might come at any time during the last few months. In spite of the knowledge, however, that death was round the corner, so to speak, he was able with surprising detachment to discuss the medical and other problems of his own patients. To few members, even of our much-loved profession, was it given to be so taken to the hearts of his friends, personal and professional, as it was to Taggart.

A graduate of the University of Edinburgh in 1905, he launched at once into busy medical practice, and he remained a busy man to the end of his professional life. His first appointment was that of resident medical officer to the Victoria Hospital, Burnley, famous at that time and later for its connexion with the name and work of Sir James Mackenzie. This position he held for two years, and he never grew weary of recalling his indebtedness to his association with this great man. Mackenzie was then a general practitioner conducting one of the busiest practices in the whole country, and from him Taggart gained an insight into the principles on which he based his work. Every case must needs have an exact diagnosis; the progress of every lesion must be watched from day to day and from week to week; no case, however insignificant, must be allowed to escape without a full record of its condition at the time of the first examination and of every subsequent examination being made. As a result of this practice Taggart used to say that few diseases ever occurred without Mackenzie being able to refer to detailed notes of a similar case in his previous experience. An association of this nature was not lost upon the then youthful Taggart, who, being well grounded in medical theory, was endowed with a retentive memory for clinical detail, and devoted himself with enthusiasm and energy to his professional work. From Mackenzie he learned to make a fetish almost of the thorough clinical examination at the bedside, so that in later years few consultants ever found that he had missed a clinical point of importance. Not that he ever failed to take advantage of modern methods of diagnosis and treatment as they appeared—and how many new methods have appeared in the last thirty years! Yet he would never allow the finding of the specialist in the laboratory or in the *x*-ray room to override his clinical judgement, based, as it always was, on examination at the bedside. When he was in the wrong he was never too proud to admit it, but such confidence did his personality inspire in his patients that they did not on that account lose faith, but willingly adopted whatever course he advised.

Commencing practice in Belfast in 1907, he found a vacant niche in the north end of the city. By applying the methods he had learnt in Burnley he became almost at once a very busy man. Already he had a wide knowledge of the practical problems of medicine and surgery.

[1] *Beckenham Advertiser*, September 17th, 1936.

Abdominal surgery especially found him in a position to avail himself of all it had to offer. He soon gained a reputation for his ability in diagnosing such abdominal emergencies as appendicitis, perforation, etc., and, by recommending prompt treatment, patients apparently hopeless recovered. These became not only his grateful patients but also his faithful ambassadors. At a time when such conditions were either missed altogether or treatment was unduly delayed, his promptness and accuracy in diagnosis soon gained him a large and ever-increasing practice. For himself every successful case became a landmark never to be forgotten, and in a short time he found himself working from morning to night, and often far into the night. At this time he worked as anaesthetist to the Royal Victoria Hospital, Belfast, thereby gaining further experience in the value of operative intervention, especially in abdominal diseases. During the great war Dr. Taggart served with distinction in the R.A.M.C., most of the time being spent in Mesopotamia.

Of a retiring disposition, Taggart depended on no adventitious aids for obtaining professional advancement. His duties to his patients were done naturally and without effort. His sincerity and uprightness were obvious to all his patients, and as a result he has occupied a unique place in the affection of a multitude of Belfast families.

S. T. I.

We regret to announce the death of Dr. Charles John Perrott of Kingswood, Bristol. He died from heart failure on September 17th while on holiday in the Lake District. He qualified L.R.C.P. and S.I. in 1885, and the whole of his professional life was spent in Kingswood, first as assistant and later as successor to Dr. Henry Grace—brother of the famous cricketer, "W. G." He was medical officer of health to the Kingswood Urban District Council from 1896 till his death. He also held the appointments of medical officer under the Poor Law, vaccination officer, and certifying factory surgeon for North Bristol. Until his retirement recently he had been for many years medical officer of the Kingswood Training School. "P. T. M." writes: To all these posts and to a large private and panel practice he gave assiduous care. During the half-century of his service he had become by his genial personality, handsome presence, and unfailing buttonhole a sort of institution in the district, and he was loved and respected by all. To one like myself who has been closely associated with him in practice the feeling of deep personal loss expressed by the patients he had long attended has been a striking testimony to his fine qualities as a trusted physician and good citizen. His wife was a daughter of Dr. Henry Grace, and predeceased him by four years. He was a member of the Gloucestershire Branch of the British Medical Association.

We announce with regret the death of Mr. R. Stuart Rodger, coroner for the Salford Hundred of the County of Lancaster. Mr. Stuart Rodger died in a Manchester nursing home on September 20th; he had been ill since the beginning of the month. The son of a Manchester doctor who practised in Cheetham Hill Road, Mr. Stuart Rodger graduated in medicine at Edinburgh University, and for some time held an appointment in the Ministry of Pensions. He was called to the Bar in 1920, and in November, 1922, was appointed by the Lancashire County Council to be coroner for the Salford district. Mr. Stuart Rodger, by reason of his outspoken, fearless, and unconventional utterances, was one of the best-known coroners in the country. He is survived by his wife and one daughter.

The following well-known foreign medical men have recently died: Dr. Luigi Devoto, professor of industrial diseases at Milan; Professor Friedrich Breinl, director of the Hygiene Institute of Prague University, as the result of mercurial poisoning, aged 48; Dr. Oskar Vulpius, professor of orthopaedics at Heidelberg University, aged 69; and Dr. C. Berg, professor of medical jurisprudence at Düsseldorf, aged 67.

Universities and Colleges

UNIVERSITY OF LONDON

University College

Dr. R. J. Lythgoe will deliver a course of five lectures on "The Physiology of Vision" on Mondays, at 5 p.m., from October 12th to November 9th. A course of four lectures on "The Endocrine Organs in Relation to Metabolism" will be given by Dr. C. Reid on Tuesdays, at 5 p.m., from October 13th to November 3rd. Dr. Phyllis M. Tookey Kerridge will deliver a course of four lectures on "The Physiology of Hearing and Speech" on Mondays, at 5 p.m., from November 16th to December 7th. The lectures are open without fee or tickets to students of the University and others interested in the subjects.

UNIVERSITY OF LEEDS

The following candidates have been approved at the examinations indicated:

M.D.—E. C. Allibone (with distinction), Marjorie Haynes.

Final M.B., Ch.B.—*Part I*: K. B. Aske, Eileen M. Bateson, D. Benson, W. A. Bridgwood, R. Cargill, S. P. H. Fergus, H. T. Hardy, L. Roberts, C. H. Robinson, A. H. Snalam. *Part II*: Rosemarie Blackwood, Joan M. Coward, F. A. Crosfill, C. L. Davidson, M. Glick, M. Headlam, M. A. Kader, R. C. Lawrence, E. Moore, R. Petticrew, J. D. F. Thornton, P. H. Wyon. *Part III*: C. L. Davidson (with second-class honours), Joan M. Coward, F. A. Crosfill, M. Glick, M. Headlam, M. A. Kader, R. C. Lawrence, E. Moore, R. Petticrew, J. P. Senior, J. D. F. Thornton, P. H. Wyon.

D.P.M.—A. Kelly.

D.P.H.—Kathleen Horne, W. Lomax, N. W. Roberts, S. Suvi, Barbara M. G. Taylor.

The William Hey Gold Medal and the West Riding Panel Practitioners' Prize in Medicine were awarded to R. L. Lamming.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The Primary Examination for the F.R.C.S. will be conducted in Australasia, India, and Egypt during the winter of 1937-8. In Australasia the examination will be held at Melbourne, Sydney, and Dunedin, the papers being written simultaneously in all three centres on November 29th and 30th, 1937. The examination in India will be conducted at Bombay during the second or third week of January, 1938, and the examination in Cairo will begin a few days after the examination in Bombay has terminated.

The Council of the Royal College of Surgeons has appointed the examiners, who will, with the assistance of assessors to be appointed for each examination, conduct all three examinations. Mr. C. P. G. Wakeley has agreed to examine in anatomy, and the examiner in physiology will be Professor A. St.G. J. McC. Huggett.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

The council of the Royal Faculty of Physicians and Surgeons will meet on October 7th to consider applications from candidates for admission to the Fellowship examination. Candidates are required to make application, in writing, on the required form, to the secretary, to whom all certificates and testimonials should be sent not later than October 5th.

The Services

CONSULTANTS FOR THE BRITISH EMERGENCY FORCE IN PALESTINE

The War Office announces that the following officers have been appointed consulting physician and consulting surgeon respectively to the British Emergency Force in Palestine, with the temporary rank of colonel: Brevet-Colonel Robert C. Priest, M.A., M.D.Camb., F.R.C.P.; Major Arnold G. Harsant, O.B.E., M.D., M.S.Lond., F.R.C.S.

Colonel Priest received his medical education at Cambridge University and St. Thomas's Hospital, and joined the Royal Army Medical Corps in 1909. He is an Honorary Physician to the King. He was medical specialist at the Queen

Alexandra Military Hospital, Millbank, from 1928 to 1933, since when he has been serving in Egypt.

Major Harsant is a graduate of London University and was a student at the London Hospital, entering the Service in 1916. Before taking up the appointment of surgical specialist at Cairo in 1932 he filled a similar post in the Aldershot Command.

THE ARMY DENTAL CORPS

The War Office announces that applications are invited for dental surgeons for appointment to twelve commissions in the Army Dental Corps. Candidates will be selected for these commissions without undergoing competitive examination, and will be required to present themselves in London for interview and physical examination at the beginning of October, 1936. They must be registered under the Dentists Acts or Medical Acts and be not over the age of 28. Successful candidates will in the first instance be given short service commissions for six years, at the end of which period they may either retire with a gratuity of £1,000 or apply for permanent commissions. Permanent commissions will be given to officers selected from among those who wish to make the Army their career. Full particulars of the conditions of service and emoluments, also form of application, may be obtained on request, either in writing or in person, to the director, Army Dental Service, War Office, London, S.W.1.

DEATHS IN THE SERVICES

Surgeon Captain Alexander Kenneth Smith-Shand, R.N. (ret.), died at York on September 9th. He was the son of the late Professor Smith-Shand of Aberdeen, and was educated at Edinburgh, where he graduated M.B., Ch.B. in 1900, after which he entered the Navy. He became surgeon commander on February 8th, 1916, and retired with an honorary step of rank as surgeon captain on February 28th, 1926. During his service he was radiologist and medical officer in charge of the massage and electrotherapeutic departments in the Royal Naval Hospitals at Haslar and Chatham, and since retirement had held a similar post at the York County Hospital. He served through the war of 1914–18, during part of which he held the post of senior medical officer of the Royal Naval Hospital at East Queensferry. The honorary secretary of the York Division of the British Medical Association writes: Dr. Smith-Shand was in the second year of his vice-chairmanship of the York Division. The Division has lost a very useful and capable member, and the Association a staunch and loyal supporter.

Medical News

Dr. John A. Ryle, Regius Professor of Physic in the University of Cambridge, will deliver the Schorstein Lecture in the anatomy theatre at the London Hospital Medical College, Turner Street, E., on Thursday, October 15th, at 4.15 p.m. The subject of Professor Ryle's lecture will be "Anorexia Nervosa." Members of the medical profession are invited to attend.

Dr. John Beattie will deliver the inaugural address on "The Experimental Method in Medicine and Surgery" to King's College Hospital Medical School on Tuesday, October 6th, at 4.30 p.m.

Professor C. G. Jung of Zurich will deliver a lecture on "Psychology and National Problems" at the Institute of Medical Psychology, Malet Place, W.C., on Wednesday, October 14th, at 8.30 p.m. The lecture, which will be followed by a discussion, is open to members of the medical profession only. Tickets (5s. each) must be obtained in advance from the educational secretary of the Institute. The number is limited.

Dr. G. O. Barber will deliver, at the Medical School, St. Mary's Hospital, a short series of lectures on the problems confronting the newly qualified practitioner about to enter general practice. The first lecture, on types of practice and methods of purchase, will be given at 5 p.m. on October 8th, and subsequent lectures at the same time on October 15th, 22nd, and 29th, November 5th, 12th, and 19th.

Sir StClair Thomson will deliver an address on "A House-surgeon's Recollections of Lord Lister" before the Listerian Society of King's College Hospital, at the hospital, Denmark Hill, S.E., on Wednesday, October 14th, at 8.30 p.m. All members of the medical profession, and especially students of the history of medicine, are invited to attend.

At the opening of the ninety-fifth session of the School of the Pharmaceutical Society of Great Britain on Wednesday, October 7th, at 3 p.m., the inaugural address will be given by Mr. Frank Lee Pyman, D.Sc., F.R.S.

The annual dinner of the London Hospital Medical College will be held at the Trocadero Restaurant on Thursday, October 15th, at 8 p.m.

The programme of the 1936–7 session of the West London Medico-Chirurgical Society opens to-day (Friday, October 2nd) with the presidential address by Mr. Neil Sinclair on "Surgical Adventure." Clinical and pathological meetings will be held on November 6th, February 5th, and May 7th. At the meeting on November 6th Dr. Hugh Gordon and others will speak on diseases of the skin. On December 4th there will be a discussion on "Non-venereal Infections of the Urinary Tract," to be opened by Dr. C. M. Wilson, Mr. H. L. Attwater, and Mr. A. E. Roche; on January 8th Mr. E. Pearce Gould and others will speak on a medico-legal subject; on March 5th there will be a discussion on "Diseases of the Colon," to be opened by Dr. A. F. Hurst, Professor G. Grey Turner, and Dr. H. W. Post; and on April 9th Dr. B. T. Parsons-Smith, Dr. Edwin Smith, and Dr. T. Skene Keith will open a discussion on "Sudden Death."

The forty-second Italian Congress of Internal Medicine will be held at Rome under the presidency of Professor Cesare Frugoni from October 19th to 22nd, when the following subjects will be discussed: adiposity and thinness; nephrosis and nephritis. Further information can be obtained from the secretary, Professor Arnaldo Pozzi, R. Clinica Medica, Rome.

The governors of Guy's Hospital announce that Lord Goschen has become president of the hospital.

At a quarterly court of governors of the Newcastle-upon-Tyne Royal Infirmary, held on September 26th, Professor Grey Turner was presented with an illuminated album in commemoration of his thirty-five years' association with the institution as a member of the surgical staff.

Many years ago Dr. James Collier started a series of neurological demonstrations at St. George's Hospital which, since his death, have been continued by Dr. Anthony Feiling at fortnightly intervals. These demonstrations are held at 5 p.m. on Thursdays during term time; they are not confined to students of the hospital, and always attract large audiences from outside. It is now proposed to start psychiatric demonstrations to alternate with the neurological demonstrations given by Dr. Feiling, which will be continued as before. Dr. Edward Mapother and the senior medical staff of the Maudsley Hospital have consented to co-operate with Dr. Desmond Curran, psychiatrist to St. George's, in giving these lectures, with the additional advantage that the cases can be drawn from the exceptional clinical resources of the Maudsley Hospital. It is felt that these new demonstrations will satisfy a real demand. The first is to be given by Dr. Mapother on Thursday, October 15th, at 5 p.m. Details of subsequent demonstrations will be published from time to time.

The issue of *Paris Médical* for September 19th is devoted to psychiatry.

The Archbishop of Westminster will appeal on behalf of the St. Francis Leper Guild in Westminster Cathedral on Sunday, October 4th, at 12 noon.

Owing to the present condition of affairs in Spain the meeting of the third International Congress of Malaria at Madrid, which had been fixed for October 12th, has been postponed, but it is hoped that it will take place in the summer of 1937.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and *the British Medical Journal* is EUSTON 2111.

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The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin).

QUERIES AND ANSWERS

Suppression of Salivary Secretion

"X. Y. Z." writes: On August 11th a lady aged 60 had three teeth removed from the maxilla—premolar and two incisors—under a local anaesthetic. Since then she has had marked suppression of the salivary secretions, the mouth being, in consequence, very dry and somewhat anaesthetic; taste is perverted, and she is very uncomfortable. The dental surgeon disclaims all responsibility, and says there is no question of cause and effect so far as the injection and extraction are concerned. The sucking of acid sweets and drinking lemon water with a view to stimulating salivary flow affords no relief. There was no trouble as described before the visit to the dental surgeon, and she is otherwise in good health. I should be very grateful for any explanation, and still more grateful for suggestions as to treatment.

Wanted—A Page Turner

"G. H." writes: I shall be greatly obliged if any reader can let me know if such a thing exists as an electrical appliance which can turn over the leaves of a book for a patient who has great difficulty in doing so for himself.

Cramp in the Legs

"W." writes: I shall be grateful for suggestions as to treatment of cramp in the legs, coming on mostly at night, in a man over 70. Apart from long-standing gastric trouble, he is healthy. Is it due to too much calcium in the arterial walls (he lives chiefly on eggs and milk), or to lack of calcium?

LETTERS, NOTES, ETC.

? Epidemic Myalgia

Dr. L. B. Scott (Dorset) writes: During the last two months my partners and I have seen some forty or fifty cases of an epidemic febrile disease whose main symptom is pain on movement of the diaphragm—that is, on laughing, coughing, sneezing, yawning, or deep breathing. This pain is in the lower thoracic region. Children and young adults are affected. The temperature is high at first, and lasts irregularly for a week or less, sometimes with intermissions. Anorexia is marked. Sometimes there is a slight sore throat. The tongue remains clean. There is considerable prostration in the severer cases, but all have recovered well. I remember reading some years ago in the *Journal* a description of a similar epidemic. Can any reader refer me to this article or to any other record of similar epidemics?

⁂ In the *Journal* of November 4th, 1933, at page 817, Dr. W. N. Pickles described an outbreak in Yorkshire of "Bornholm" disease—now better known as epidemic myalgia. An annotation on the same subject appeared in the issue of December 23rd, 1933 (p. 1178). Dr. Pickles's original article may be the one to which Dr. Scott refers.

Problems of Chance in Clinical Work

Dr. W. L. English (Crewe) writes: The fallacy in the "experiments" suggested by certain scientists, astronomers, and others is simple. The experiment with the halfpennies is a product of a mental exercise, and is not carried out with real coins. One cannot throw up the same halfpenny twice, as the mere act of touching it wears it out to some extent. It is part oxidized before it comes down. Can any event or experiment be actually repeated? As the immortal Holmes would say, this is elementary. Einstein argues from real events as opposed to previous theoretical considerations. In Dr. Mainland's interesting article (*Journal*, August 1st, p. 221) he mentions samples (the definition given in a dictionary is: "a part of anything presented as evidence of the quality of the whole.") What samples of anything, in the widest sense, are alike, actually identical?

Healthy Teeth

We have received copies of *The Story of a Tooth*; a pamphlet describing in simple language the process of decay in a tooth from the appearance of a small pit of decay in the enamel, through destruction of the nerve, to abscess formation in the jaw. The pamphlet has been designed for the Dental Board by the Senior Dental Officer of the West Riding County Council, and, with its nine illustrations of the different stages in this process of decay, is admirably suited to its purpose—namely, for use in elementary schools.

Institute of British Surgical Technicians

An Institute of British Surgical Technicians has lately been formed with the object of according professional status to persons engaged in the surgical instrument and appliance industry. A surgical technician is defined as "one who, in conjunction with the surgical and medical profession, designs and produces the tools, instruments, and appliances required by them in their profession and for the use of their patients." This covers alike the manufacturers of the surgeon's instruments, the operating table, and the artificial limb. The initiative in founding the institute was taken in October, 1934, by the Surgical Instrument Manufacturers' Association, but there is no connexion between the activities of the two bodies. The membership of the institute consists of fellows and licentiates, and there are also student associates. The qualification for fellowship is the holding of a statutory qualification in surgical technology, experience of certain hospital or other appointments, or recognition by the council of the institute as having special proficiency or experience; and for licentiateship the passing of an examination or the attainment of other prescribed qualifications. At the first general meeting in May last it was reported that the membership was already 145, and the chairman, Mr. H. Guy Drew, expressed the hope that by the next annual meeting the figure might be doubled. The institute has a threefold design: the creation of a register with certificates of qualification, the organization of a system of technical education, and the pronouncement of an ethical code binding the members to work only with professional (that is, medical and surgical) collaboration. This code states that the technician "must at no time assume the status of one having surgical or medical knowledge, and it therefore follows that he must not advertise that he is in a position to cure any human failing or physical ill. . . . His constant endeavour must be to use his experience, skill, and mechanical knowledge in the construction and application of appliances for the relief of human ailments and suffering in collaboration with the surgical and medical profession." It is specially forbidden that he should proclaim or let it be understood that he can cure failings such as deafness, hernia, blindness, paralysis, or any ailments in connexion with the sexual system. The educational scheme adopted by the council includes courses for juveniles entering the industry, older students, and advanced craftsmen. A course of lectures by surgeons is arranged for the autumn and winter. The first volume of the institute's *Transactions* (issued from 6, Holborn Viaduct, E.C.1) contains the report of the first meeting, particulars of the education scheme and the ethical code, the register of members and a list of the firms employing them, and the reports of two technical lectures and discussions.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 51, 52, 53, 54, 55, 58, 59, and 60 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 56 and 57.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 191.